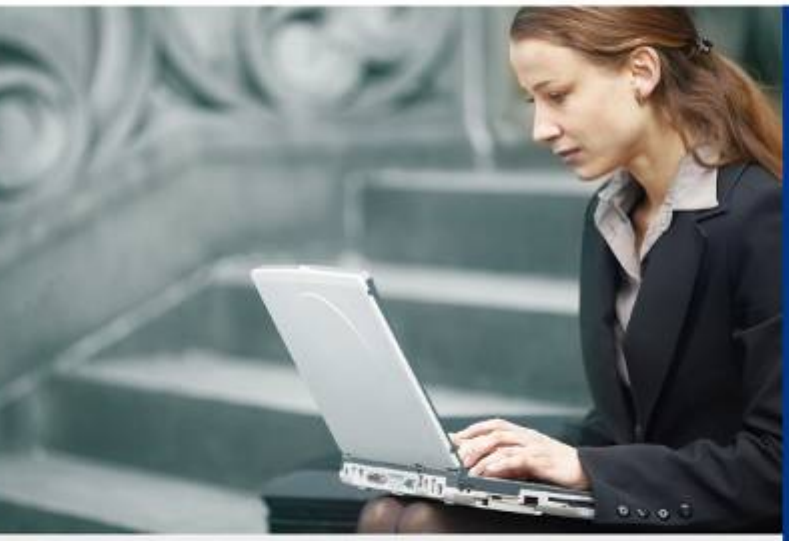
PLANET
Networking & Communication

User's Manual

802.11n High Speed USB Adapter

► WNL-U554M



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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio technician for help.

FCC Caution

To assure continued compliance. (Example - use only shielded interface cables when connecting to computer or peripheral devices). Any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.
This device complies with Part 15 of the FCC Rules. Operation is subject to the Following two conditions: (1) This device may not cause harmful interference, and (2) this Device must accept any interference received, including interference that may cause undesired operation.

Federal Communication Commission (FCC) Radiation Exposure Statement

This equipment complies with FCC radiation exposure set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 inches) during normal operation.

CE mark Warning

This is a class B device, in a domestic environment; this product may cause radio interference, in which case the user may be required to take adequate measures.

R&TTE Compliance Statement

This equipment complies with all the requirements of DIRECTIVE 1999/5/CE OF THE EUROPEAN PARLIAMENT AND THE COUNCIL OF 9 March 1999 on radio equipment and telecommunication terminal Equipment and the mutual recognition of their conformity (R&TTE). The R&TTE Directive repeals and replaces in the directive 98/13/EEC (Telecommunications Terminal Equipment and Satellite Earth Station Equipment) As of April 8, 2000.

Safety

This equipment is designed with the utmost care for the safety of those who install and use it. However, special attention must be paid to the dangers of electric shock and static electricity when working with electrical equipment. All guidelines of this and of the computer manufacture must therefore be allowed at all times to ensure the safe use of the equipment.

EU Countries Intended for Use

The ETSI version of this device is intended for home and office use in Austria Belgium, Denmark, Finland, and France (with Frequency channel restrictions). Germany, Greece, Ireland, Italy, Luxembourg .The Netherlands, Portugal, Spain, Sweden and United Kingdom.
The ETSI version of this device is also authorized for use in EFTA member states Iceland, Liechtenstein, Norway and Switzerland.

WEEE regulation

To avoid the potential effects on the environment and human health as a result of the presence of hazardous substances in electrical and electronic equipment, end users of electrical and electronic equipment should understand the meaning of the crossed-out wheeled bin symbol. Do not dispose of WEEE as unsorted municipal waste and have to collect such WEEE separately.

Revision

User's Manual for PLANET 150Mbps 802.11n Wireless USB Adapter

Model: WNL-U554M

Rev: EM-WNLU554M_v2.01 (January, 2013)

Part No. 2081-E23170-000

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Chapter 1. PRODUCT INTRODUCTION

1.1 Package contents

The following items should be contained in the package:

- WNL-U554M(150Mbps 802.11n Wireless Micro-Size USB adapter)

- Quick Installation Guide

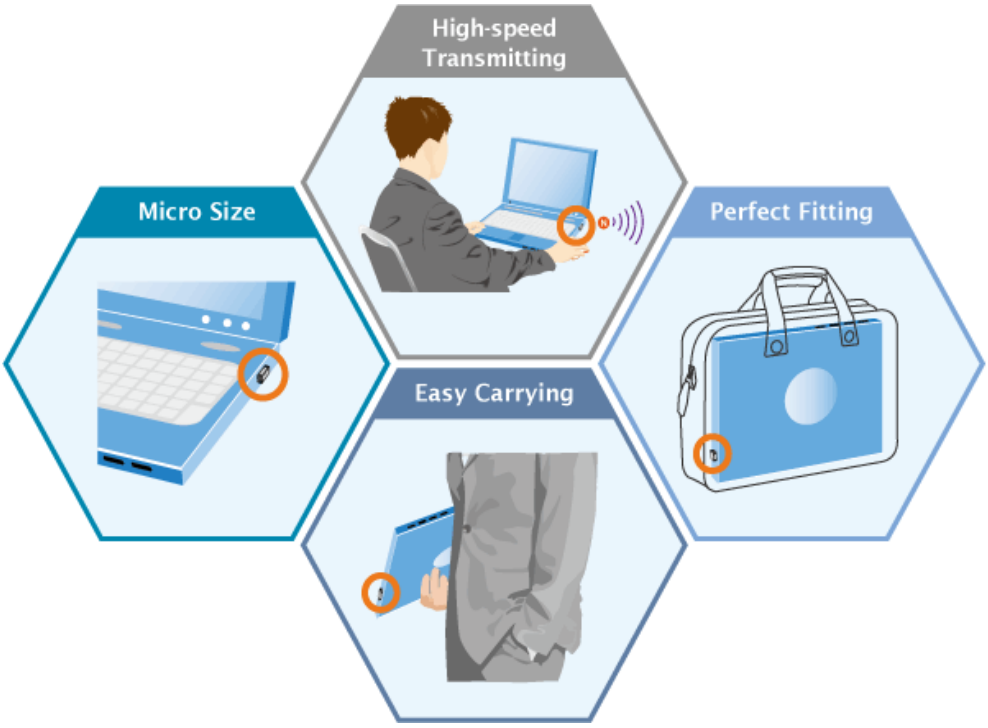
- CD (includes driver/utility/user's manual)

If there is any item missed or damaged, please contact the seller immediately.

1.2 Product Description

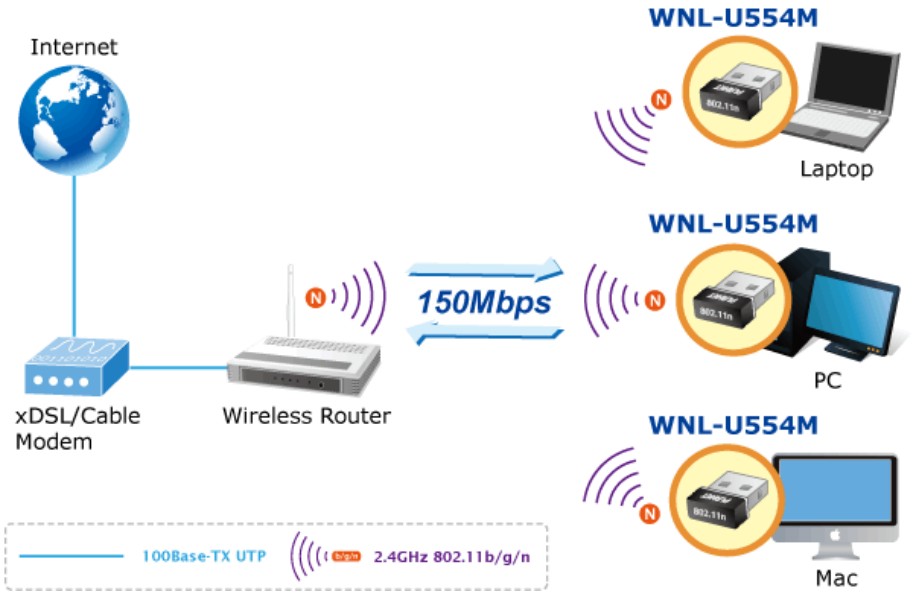
Ultra Mini Size Portable USB Adapter Boost 11n Performance

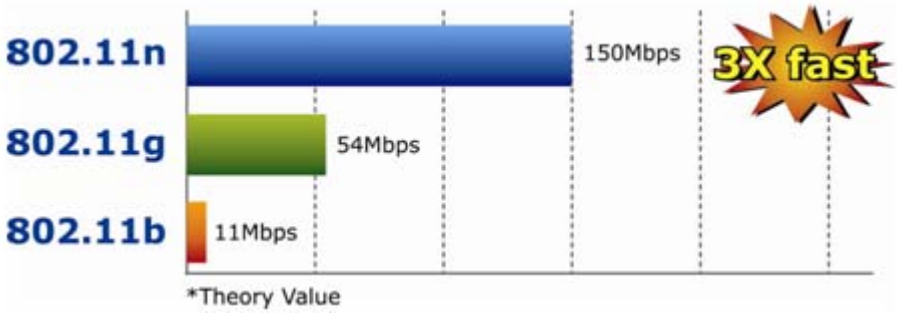
The PLANET WNL-U554M is specially designed for users who need high mobility and provides 150Mbps 802.11n high speed wireless transmission. The ultra mini size compact design of WNL-U554M is convenient to carry for all mobile users. Users will not need to remove it from the laptop anymore, no matter operating, moving, or even put the laptop back to the briefcase. It is just like a part of the laptop or PC and hidden very well once it is plugged into USB port.



High Speed 802.11n Wireless Experience

The WNL-U554M offers a reliable and cost effective wireless extending solution. It adopts IEEE 802.11n technology and is backward compatible with IEEE 802.11b and 802.11g. The WNL-U554M supports USB 2.0 interface that integrates with one transmit channel and one concurrent receive channel to enable the speed up to 150Mbps for both data upload and download.





Advanced Wireless Security

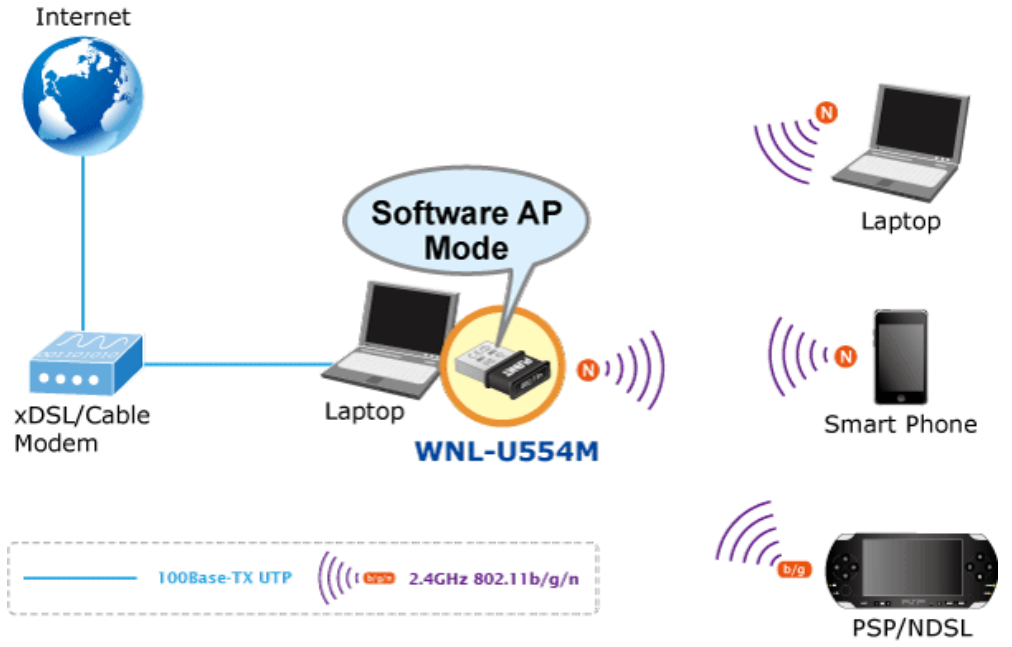
The WNL-U554M provides advanced security features including 64/128-bit WEP, WPA / WPA2 and WPA-PSK / WPA2-PSK with TKIP/AES encryption. Furthermore, in order to simplify the security configurations, WPS (Wi-Fi Protected Setup) function is included to offer a convenient and fast connection method for users as well.

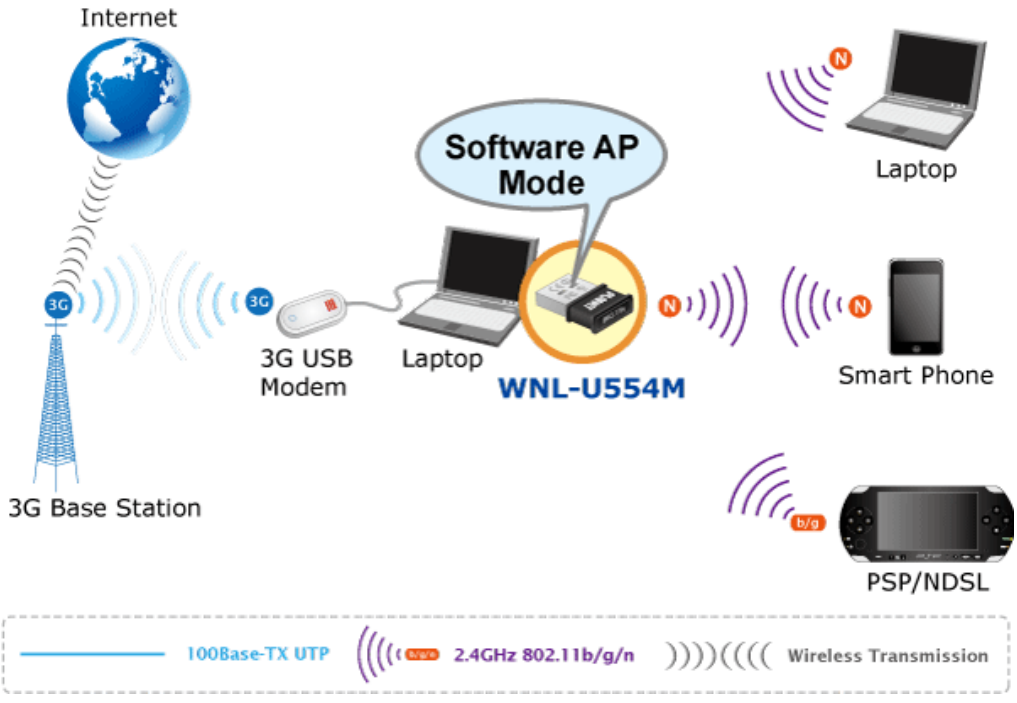
Multiple OS Compliant

The WNL-U554M supports most popular operating systems including Windows 2000, XP, Vista, Win7, Linux, and MAC OS X. With high speed capability, users can have higher wireless transmission speed anywhere and anytime.

Software Access Point Function for Wireless Connection Sharing

More than just being an adapter for PC and laptop connecting to high speed wireless network, the WNL-U554M can also become a wireless access point. By applying the USB Wireless LAN Utility included in the package, users can switch the WNL-U554M operation mode between Station mode and Access Point mode. When the WNL-U554M is in the Access Point mode, it turns to a Wi-Fi Hotspot. The Wi-Fi supported devices such as iPhone / Android / Symbian / Windows Phone / iPod Touch / iPad / NDS / PSP can connect to it and share the wireless access easily. Therefore, travelers would then be worry free to connect to Internet wirelessly via the WNL-U554M when there is only wired Internet available anywhere.


Internet
Software AP Mode
Laptop
xDSL/Cable Modem
Laptop
WNL-U554M
Smart Phone
100Base-TX UTP
2.4GHz 802.11b/g/n
PSP/NDSL

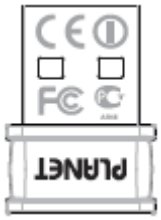

Internet
Software AP Mode
Laptop
3G USB Modem
Laptop
WNL-U554M
Smart Phone
3G Base Station
PSP/NDSL
100Base-TX UTP
2.4GHz 802.11b/g/n
Wireless Transmission

1.3 Product Features

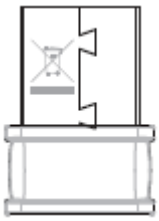
- 2.4GHz ISM band, unlicensed operation
- Compliant with IEEE 802.11b/g/n
- Provides up to 150Mbps download and 150Mbps upload data rate
- Wi-Fi Protected Setup (WPS) support
- Supports WEP 64/128-bit, WPA / WPA2, WPA-PSK / WPA2-PSK (TKIP/AES encryption)
- Supports Software AP mode
- Supports Wireless QoS (WMM)
- USB 2.0 attached interface
- Compact-size Design
- Supports most popular operating systems including Windows 2000, XP, Vista, Win 7, Linux, and MAC OS X.

1.4 Hardware Description

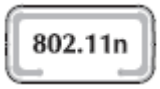
- **Case Outlook**



Front View



Rear View



Top View

1.5 Software Description

1.5.1 Tray Icon

- **Client Mode**

Wireless connection is established, good signal reception.

Wireless connection is established, normal signal reception.

Wireless connection is established, weak signal reception.

Connection is not established yet..

Wireless network card is not detected.

Wireless encryption is wrong.

■ **AP Mode**

Wireless connection is established, good signal reception.

Wireless connection is established, normal signal reception.

Wireless connection is established, weak signal reception.

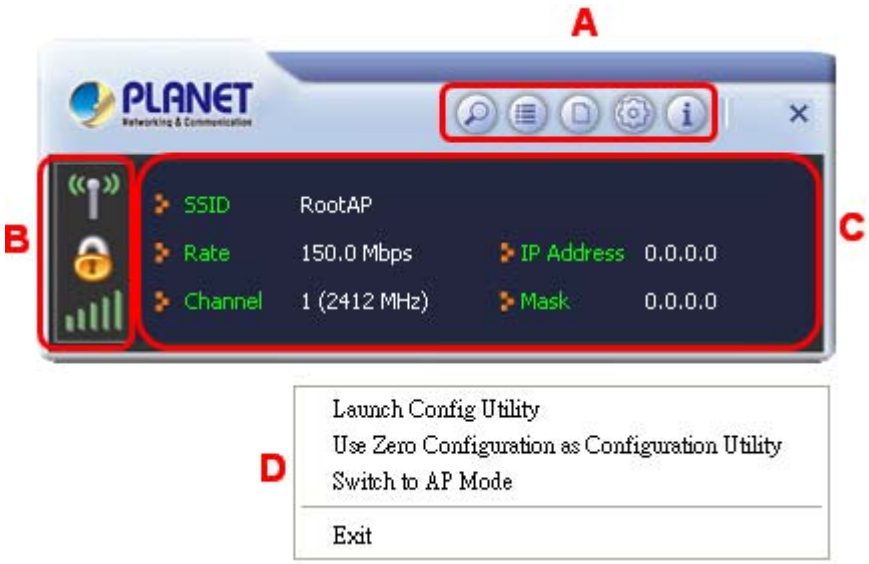
Connection is not established yet.

Wireless network card is not detected.

Wireless encryption is wrong.

1.5.2 Main Screen

■ **Client Mode**



A. Click these buttons to open the following screens and access the Utility's features.

Use the Wi-Fi Direct screens to set up a Wi-Fi Direct connection, and to share media files such as music or movies.

Use the Available Networks screen to find out about available wireless networks and their network status, and to connect to a wireless network.

Use the Link Information screens to find detailed information on the status of your wireless connection.

Use the Profile Settings screens to set up and use profiles to more quickly connect using frequently used settings, and to set up wireless security.

Use the Advanced screens to select your region code, and to install WAPI certificates.

Use the About screen to find version information for your Utility.

B. Use these buttons and icons to manage transmission and to find information about your wireless connection.

Click this button to enable or disable wireless transmission.

Indicates the security status of your connection.

Indicates the quality of your wireless connection.

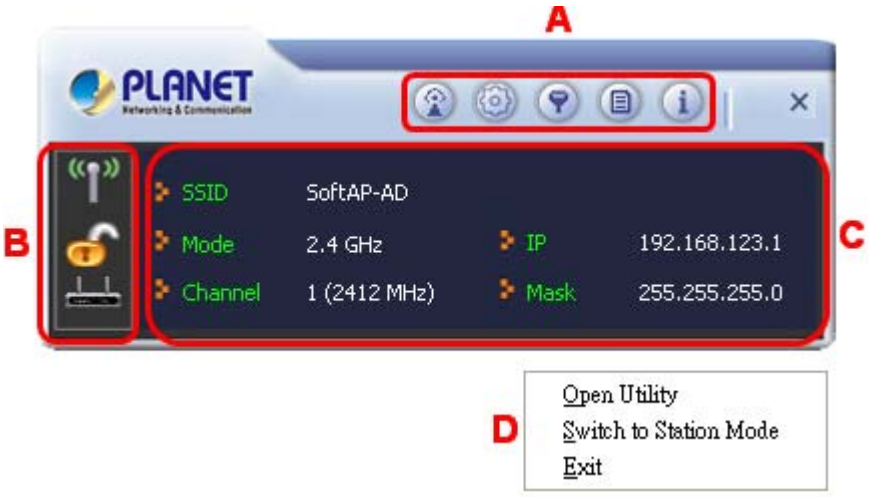
C. Use this screen to find information on wireless network settings.

SSID	This shows the name of your wireless network.
Rate	This shows the speed of your connection.
Channel	This is the channel assigned to your connection. Change this if interference is a problem on your network.
IP Address	This identifies the Adapter on your wireless network; much like a physical mailing address identifies a house on a street.
Mask	The subnet mask hides your IP address from outside your wireless network.

D. Lets you change the operation mode of the Utility.

Launch Config Utility	Select this option to display the Utility's main screen.
Use Zero Configuration as Config Utility	(Windows XP only) Select this option to use Windows to set up and manage your network connection. Selection of this mode is not necessary in Windows Vista, 7 or higher, as you can use Windows and the Utility to manage the Adapter without changing operating modes.
Switch to Client + AP Mode	(Windows 7 and higher only) Select this option to let computers and devices connected to the AP access the Internet (or another network to which the AP is connected).
Switch to AP Mode	Select this option to use the Utility as an access point and to set up a wireless network of your own.
Exit	Select this option to close the main screen and exit the program. Any wireless connections managed by the Utility will be disconnected.

■ AP Mode



A. Click these buttons to open the following screens and access the Utility's features.

Use the AP Setup screen to set up a secure wireless network.

Use the Advanced screen to configure advanced network settings.

Use the Access Control List screen to configure an access policy for your network based on a client's MAC address.

Use the Connected Devices screen to find information on clients currently connected to your network.

Use the About screen to find information on specifications for the Utility.

B. Use these buttons and icons to manage transmission and to find information about your wireless connection.

Click the RF buttons to enable or disable wireless transmission.

Indicates the security status of your connection.

Indicates AP Mode is enabled.

C. Use this screen to find information on wireless network settings.

SSID	This shows the name of your wireless network.
Mode	Indicates the mode and hence frequency supported by your wireless connection.
Channel	The channel assigned to your connection. Default is 6, options are 1-12.
IP Address	The IP address identifies your Adapter on your wireless network.
Mask	The subnet mask hides your IP address from outside your wireless network.

D. Lets you change the operation mode of the Utility.

Open Utility	Select this option to display the Utility's main screen.
Switch to Station Mode	(Windows 7 and higher only) Select this option to let computers and devices connected to the AP access the Internet (or another network to which the AP is connected).
Exit	Select this option to close the main screen and exit the program. Any wireless connections managed by the Utility will be disconnected.

Chapter 2. INSTALLATION

2.1 Microsoft Windows Driver Installation

1. If you had ever installed other wireless adapters before, please uninstall the existed drivers and utilities first.
2. The following installation is performed in Windows XP. The procedures in other OS are similar.

Please follow the instructions below to install the USB Wireless Adapter:

Step 1. Insert the USB wireless network card into an empty USB 2.0 port of your computer when computer is switched on. Never use force to insert the card, if you feel it's stuck, flip the card over and try again.

Step 2. The system will find the new hardware and display the below message. Click "**Cancel**" to skip.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

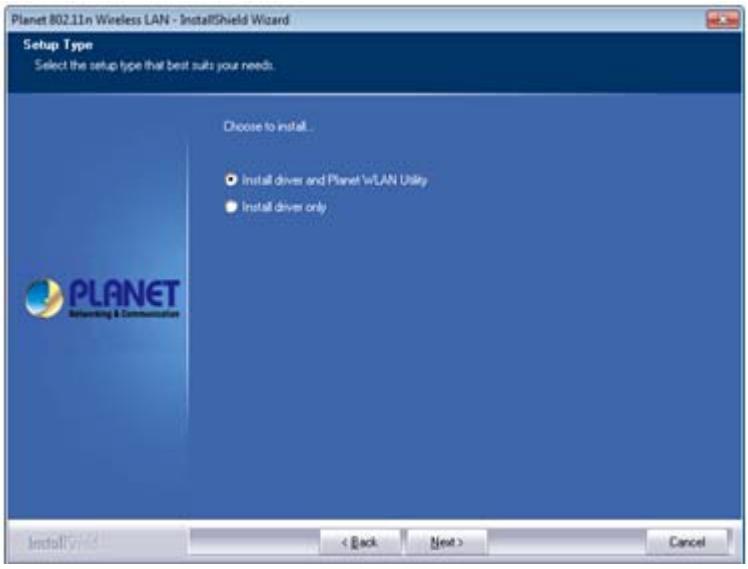
Step 3. Insert the bundled CD into the CD-ROM drive.

Step 4. Then a webpage will appear. Click the "**Windows Utility**" hyperlink to initiate the installing wizard.

Step 5. Read the License Agreement carefully. Select "**I accept the term of the license agreement**" and click "**Next**" button to accept it and continue.

Planet 802.11n Wireless LAN - InstallShield Wizard
License Agreement
Please read the following license agreement carefully
Planet Wireless Utility for Windows 98/ME/2000/XP/Vista/Win7
Copyright (C) Planet TECHNOLOGY, CORP. All Rights Reserved.
Thank you for purchasing Planet Wireless product!
SOFTWARE PRODUCT LICENSE
The SOFTWARE PRODUCT is protected by copyright laws and international copyright treaties, as well as other intellectual property laws and treaties. The SOFTWARE PRODUCT is licensed, not sold.
1. GRANT OF LICENSE. This End-User License Agreement grants you the following rights:Installation and Use. You may install and use an unlimited number of copies of the SOFTWARE PRODUCT.
Reproduction and Distribution. You may reproduce and distribute an unlimited number of copies of the SOFTWARE PRODUCT; provided that each copy shall be a true and complete copy, including all copyright and trademark notices, and shall be accompanied by a copy of this EULA. Copies of the SOFTWARE PRODUCT may be distributed as a standalone product or included with your own product.
I accept the terms of the license agreement
I do not accept the terms of the license agreement
Print
InstallShield
< Back
Next >
Cancel

Step 6. Click “**Next**” button to start installing the driver and utility.


Planet 802.11n Wireless LAN - InstallShield Wizard
Setup Type
Select the setup type that best suits your needs.
Choose to install...
Install driver and Planet wLAN Utility
Install driver only
PLANET
< Back
Next >
Cancel

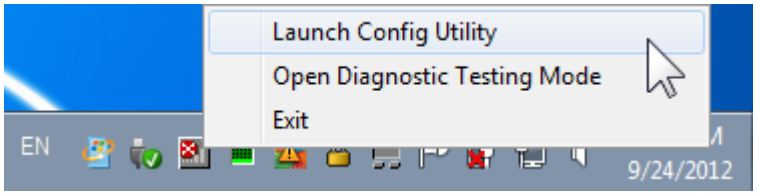
If the screen below appears during installation, please click “**Continue Anyway**” button to continue.

Note

Software Installation
The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

Step 7. Please click "**Finish**" to finish the installation.

Step 8. Execute the WNL-U554M utility, and then right-click the tray icon of WNL-U554M from the system task bar. Select "**Launch Config Utility**" to start setting your wireless network.



After the driver of wireless adapter has been installed successfully, you'll see another message pop-up at lower-right corner of the screen. And there is also a new icon appeared on the system tray.

Left-click the new icon will launch PLANET 11n USB Wireless LAN Utility, and right-click the icon will show the quick menu of configuration utility. This icon also uses different colors to show the status of wireless connection:

Wireless connection is established, good signal reception.

Wireless connection is established, normal signal reception.

Wireless connection is established, weak signal reception.

Connection is not established yet..

Wireless network card is not detected.

Wireless encryption is wrong.

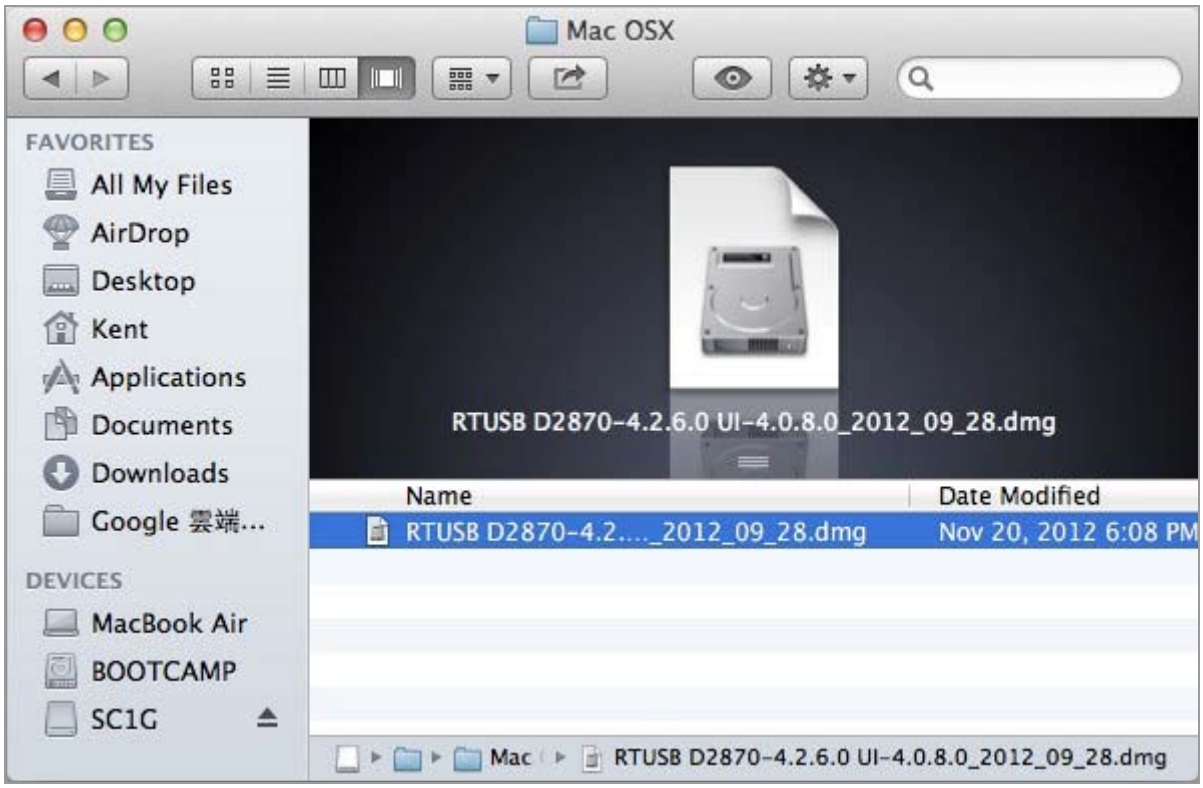
2.2 MAC OS X 10.x Driver Installation

The WNL-U554M supports MAC OS X 10.4 / 10.5 / 10.6 / 10.7. To install in MAC OS X operation system, please follow the instructions below to install the USB Wireless Adapter:

Note

Obtain the Mac driver from the bundled CD or download the official Mac driver from this site.

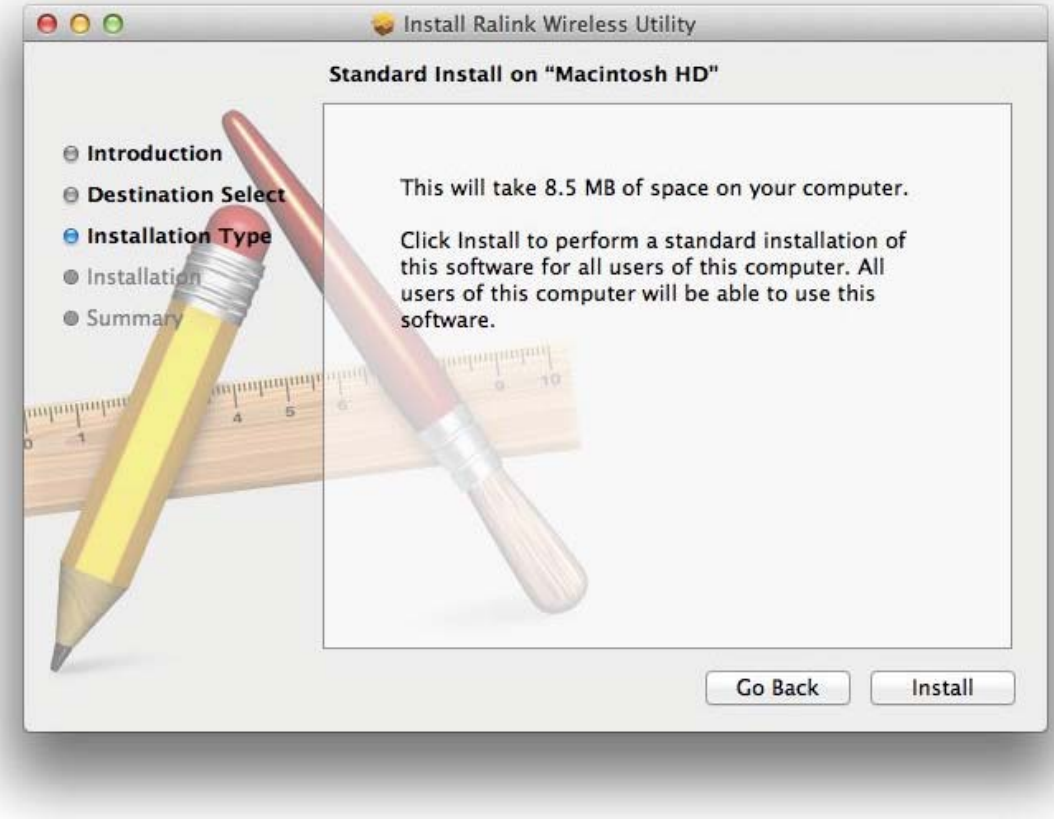
Step 1. Click the driver file.



Step 2. It will pop up a window "**Welcome to the Wireless Utility Installer**", please click "**Continue**".

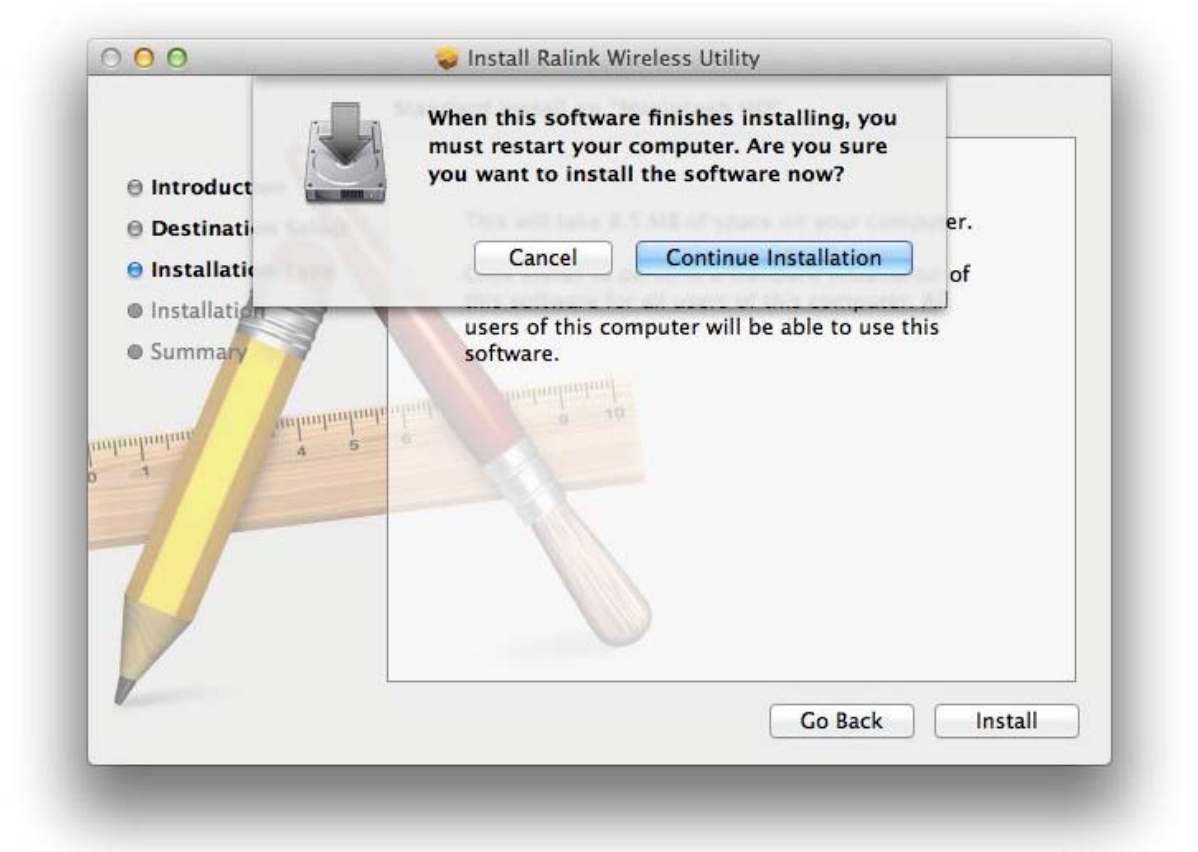
Install Ralink Wireless Utility
Welcome to the Ralink Wireless Utility Installer
Introduction
Destination Select
Installation Type
Installation
Summary
You will be guided through the steps necessary to install this software.
After the installation has finished, restart your Mac. Then open Network Preferences to configure your new wireless adapter.
Go Back
Continue

Step 3. After read the important information, please click "**Install**" in the following steps.

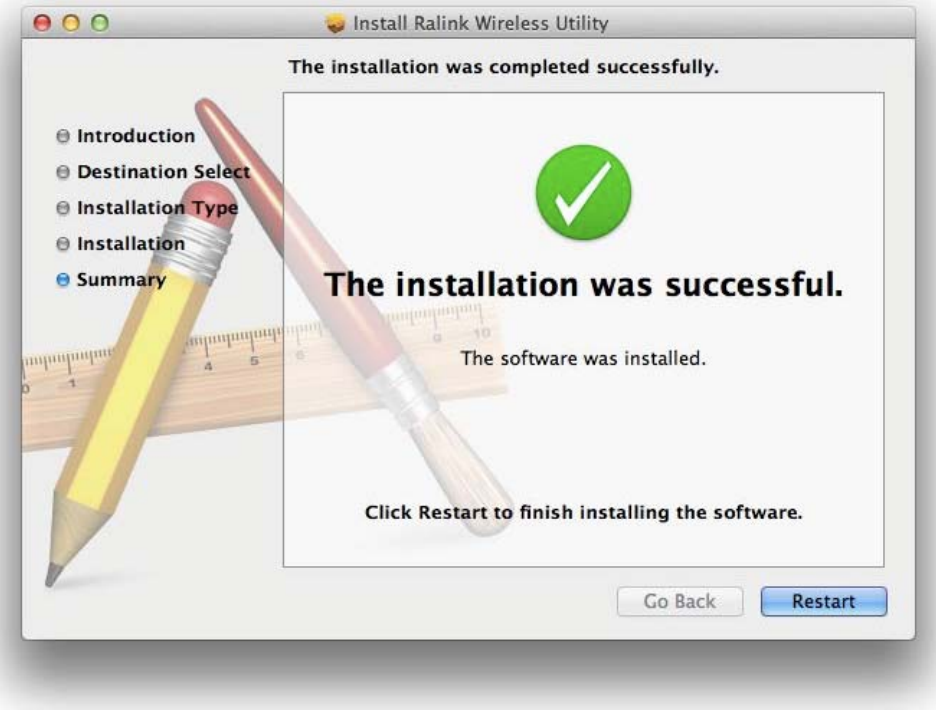

Install Ralink Wireless Utility
Standard Install on "Macintosh HD"
Introduction
Destination Select
Installation Type
Installation
Summary
This will take 8.5 MB of space on your computer.
Click Install to perform a standard installation of this software for all users of this computer. All users of this computer will be able to use this software.
Go Back
Install

Step 4. Enter your Username and Password of the System. Then, click "**OK**".

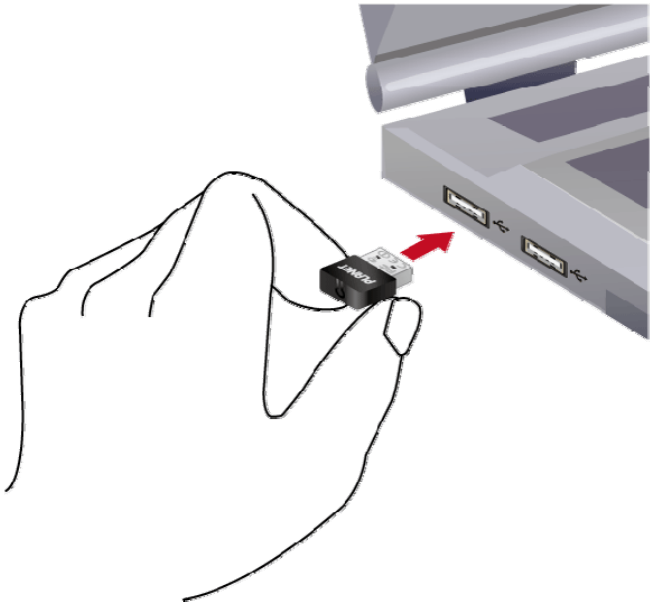
Step 5. The window pops up the notice to remind you that computer will restart while finishing the installing. Please click "**Continue Installation**".



Step 6. When the installation was successful, click "**Restart**" to restart your computer.

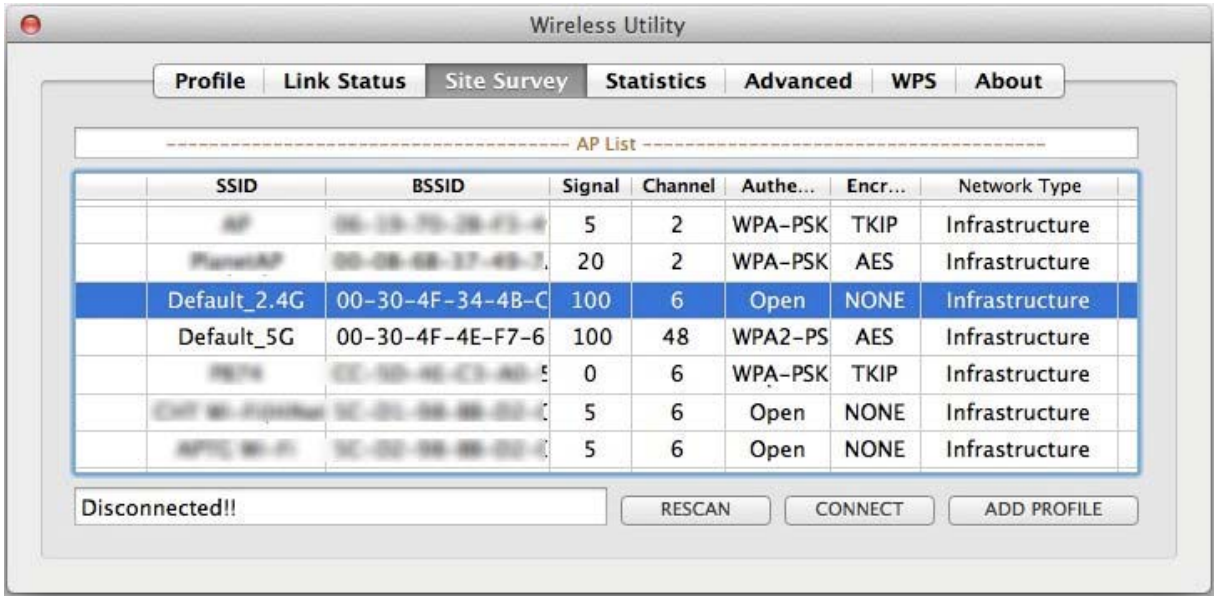


Step 7. After restart the computer, plug the wireless adapter into the USB port on your computer.

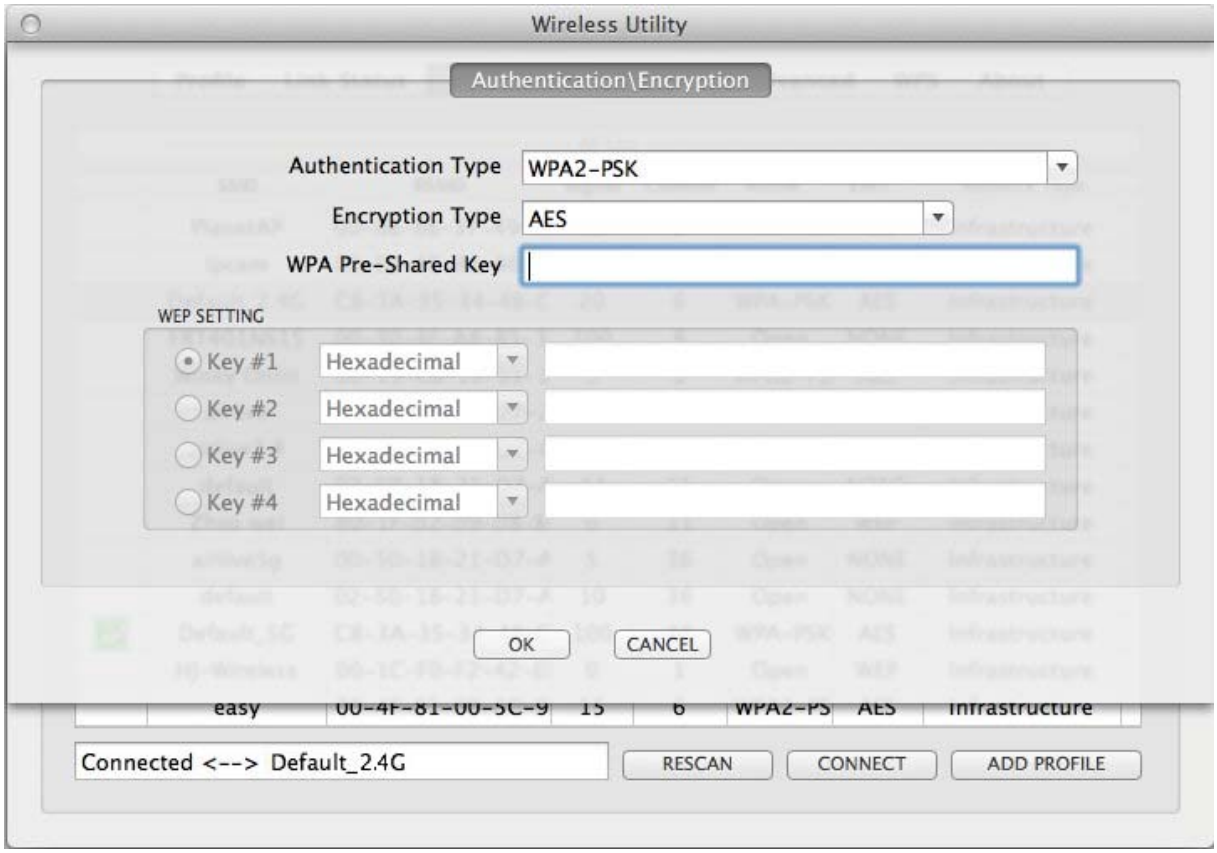


Step 8. Right-Click on the **Wireless Utility icon** displayed in the Mac OS X system tray. Then, click "**Open Wireless Utility**". The Wireless Utility network connection menu will appear

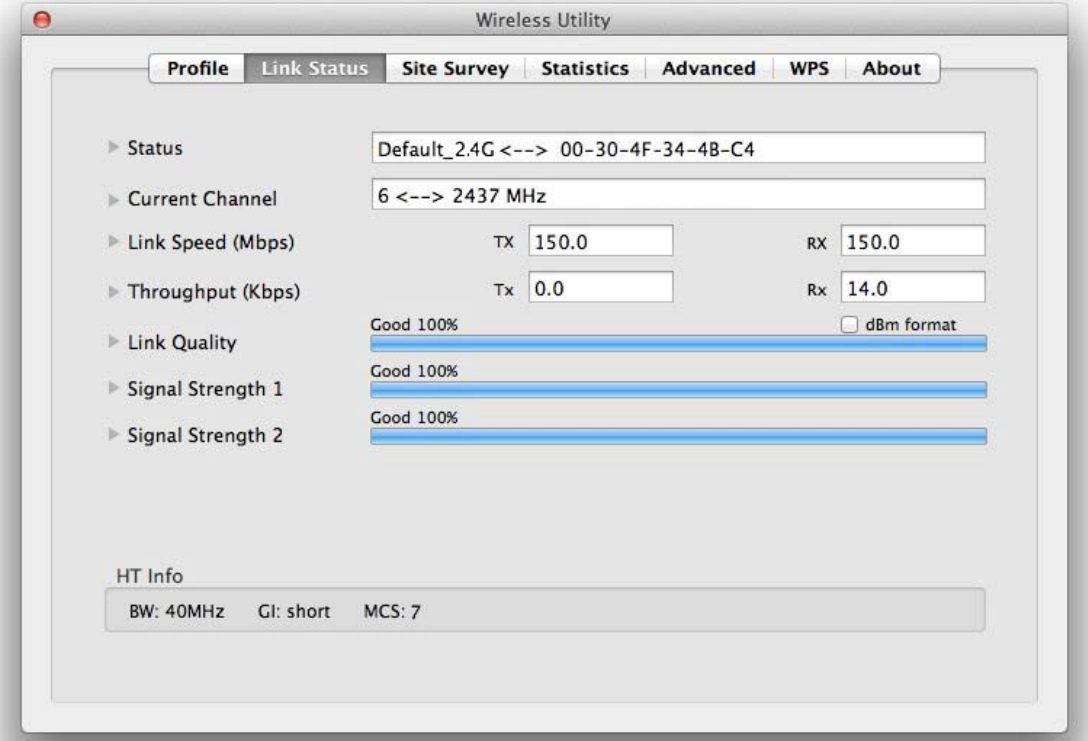
Step 9. Click "**Site Survrty**". Choose the AP you would like to connect. Then, click "**ADD PROFILE**".



Step 10. Select the encryption type of the AP that you connected and fill in encryption key. Click "**OK**", and finish the installation and configuration of the wireless adapter!



Step 11. Click "**Link Status**" to check your wireless adapter is well connected to the target AP. It also shows the Link Speed, Quality and Bandwidth information in this page.


Wireless Utility
Profile
Link Status
Site Survey
Statistics
Advanced
WPS
About
Status
Default_2.4G <--> 00-30-4F-34-4B-C4
Current Channel
6 <--> 2437 MHz
Link Speed (Mbps)
TX 150.0
RX 150.0
Throughput (Kbps)
Tx 0.0
Rx 14.0
Link Quality
Good 100%
dBm format
Signal Strength 1
Good 100%
Signal Strength 2
Good 100%
HT Info
BW: 40MHz GI: short MCS: 7

2.3 Linux Driver Installation

The WNL-U554M supports following Linux platform:

- **Linux Kernel 2.6.18~2.6.38**
- **Linux Kernel 3.0.8**

Obtain the Linux driver from the bundled CD or download the official Linux driver from this site, and build the driver for the Linux OS that you are using.

1. If the driver has been downloaded to your Downloads folder and is called 2011_0719_RT3070_RT3370_RT5370_RT5372_Linux_STA_V2.5.0.3_DPO.bz2. Open a terminal, and type or paste the following:

```
sudo apt-get install linux-headers-$(uname -r) build-essential
cd Downloads
tar -xjf 2011_0719_RT3070_RT3370_RT5370_RT5372_Linux_STA_V2.5.0.3_DPO
cd 2011_0719_RT3070_RT3370_RT5370_RT5372_Linux_STA_V2.5.0.3_DPO
sudo make && sudo make install
make clean
cd ..
rm -rf 2011_0719_RT3070_RT3370_RT5370_RT5372_Linux_STA_V2.5.0.3_DPO
```

2. Reboot, and hopefully your wireless connection will appear!

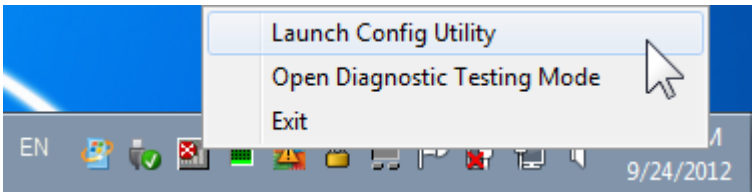
Chapter 3. CONNECTING TO WIRELESS NETWORK

To use wireless network, you have to connect to a wireless access point first. You can either use **PLANET 11n USB Wireless LAN Utility** (comes with network adapter), or **Windows Zero Config utility** (comes with Windows operating system).

3.1 PLANET 11n USB Wireless LAN Utility

Please follow the instructions below to connect the wireless access point via PLANET 11n USB Wireless LAN Utility.

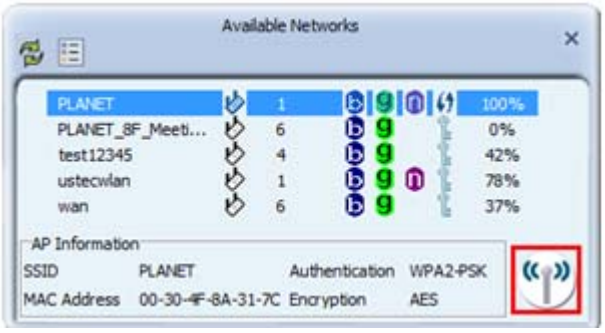
Step 1. Left-click the **PLANET Wireless Utility** icon located at lower-right corner of the screen, and configuration menu will appear:



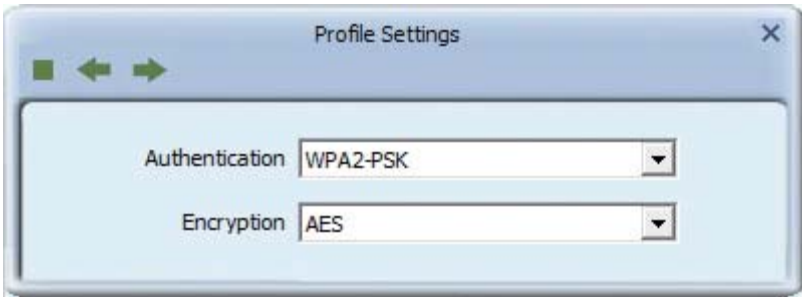
Step 2. Click "**Available Network**" icon. Please wait for a while, and all wireless access points nearby which can be reached by the wireless adapter will be displayed here.

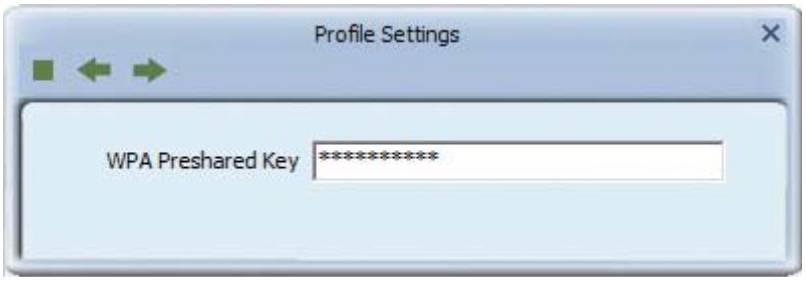
If the wireless access point you wish to connect does not appear here, you can click "**Refresh**" button to scan for wireless access points again; if the wireless access point you're looking for still not appear, try to move the computer closer to the access point.

Step 3. Click twice on the AP you would like to connect or click the "**Connect**" icon at the lower-right corner of the window.



Step 4. If a password (Network Key) is required to access the wireless access point, please confirm the Authentication and Encryption method first, and then key in the password in the "**WPA Preshared Key**".





Note

Network security option ("**Authentication**" and "**Encryption**") will be selected automatically based on the security setting of the wireless access point you selected. It's not necessary to change these settings by your own self.

Step 5. Click "**Right arrow**" button, and you'll see the connection has been added to the profile and then you can connect to the wireless network successfully.

Step 6. Wireless adapter will attempt to connect to access point; this may require few seconds to minutes. When the SSID and IP address are displayed in the main window, your computer is connected to access point you selected. Click "**Close**" icon to close configuration window.

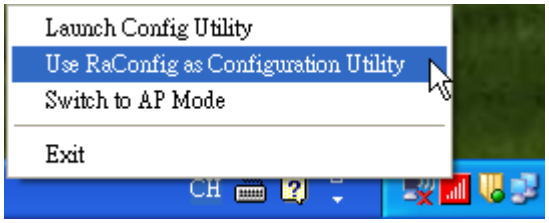
Note

If you connected to an access point but the connection was dropped soon, please check security settings and re-check password spelling.

3.2 Windows Zero Configuration

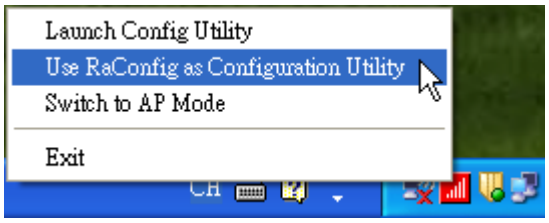
Windows XP / Vista / 7 has a built-in wireless network configuration utility, called as "**Windows Zero Configuration**" (WZC). You can also use WZC to configure your wireless network parameter:

Step 1. Right-click PLANET Wireless Utility icon, and click "**Open Config Utility**".



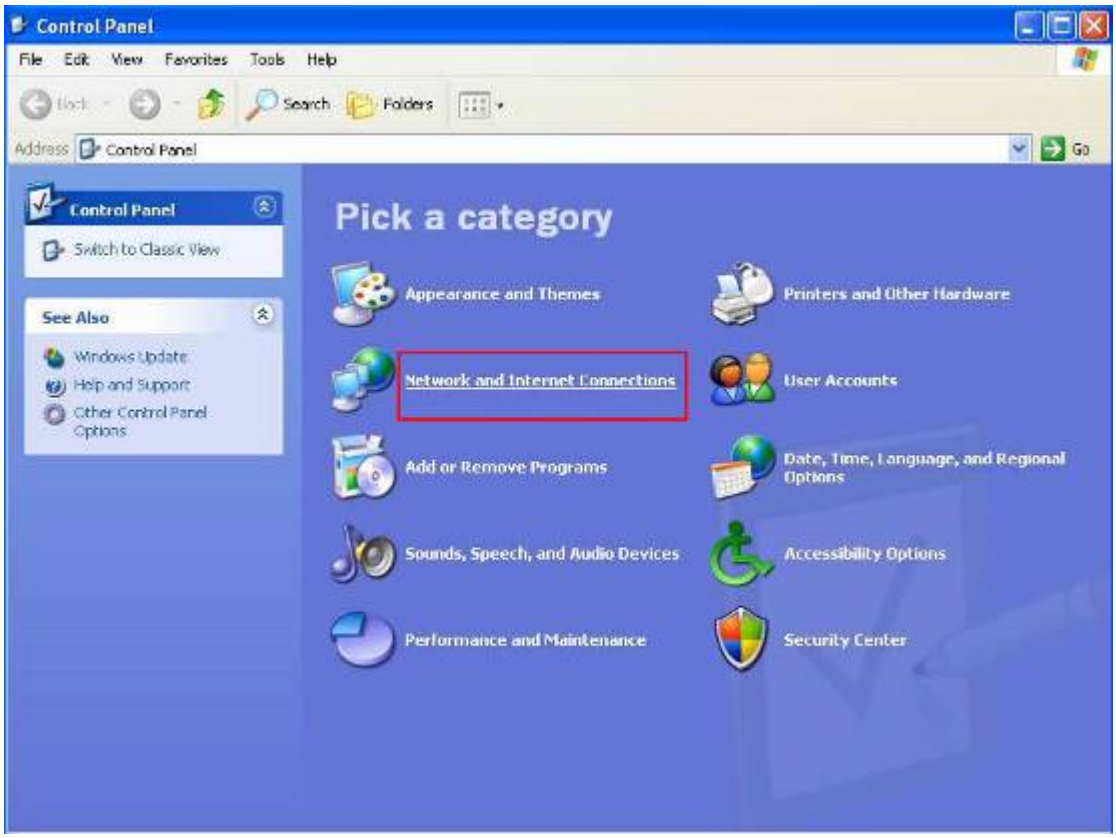
Note

To return to use PLANET wireless utility, click "**Use RaConfig as Configuration Utility**".

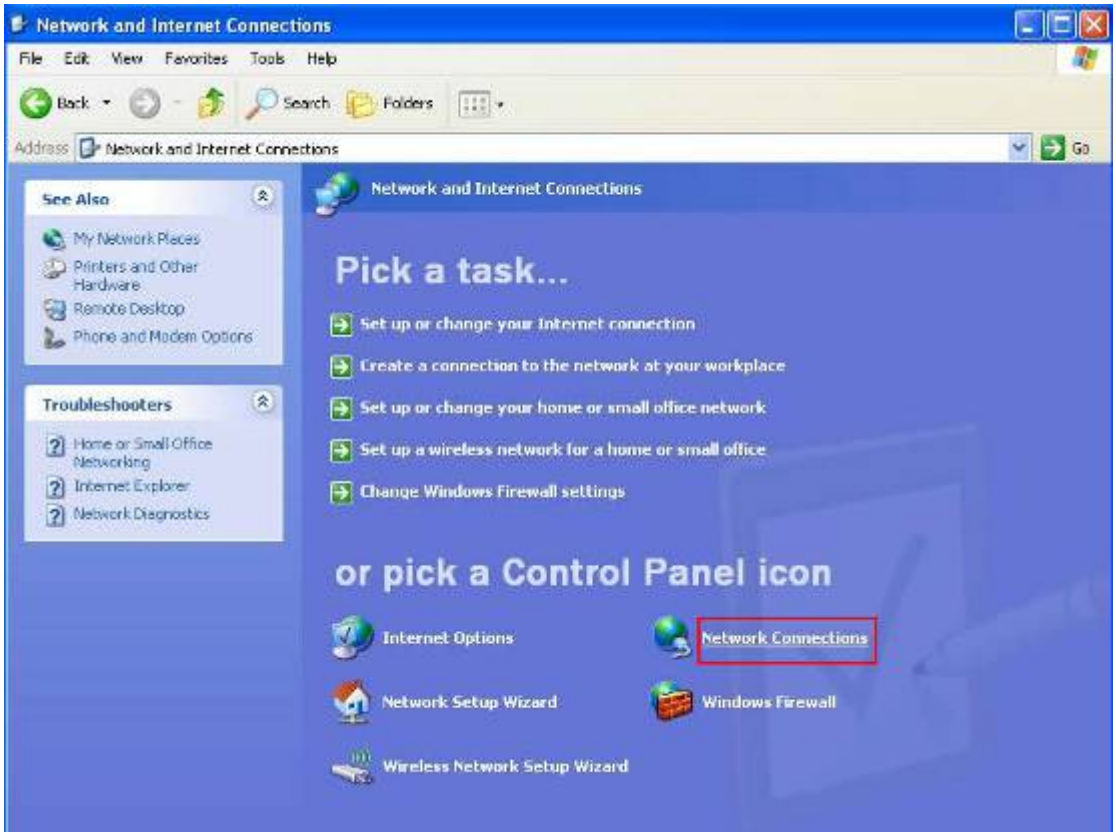


3.2.1 Windows XP - Use Windows Zero Configure

Step 2. Click "**Start**" button (should be located at the bottom-left corner of windows desktop), click "**Control Panel**", then click "**Network and Internet Connections**" in Control Panel.

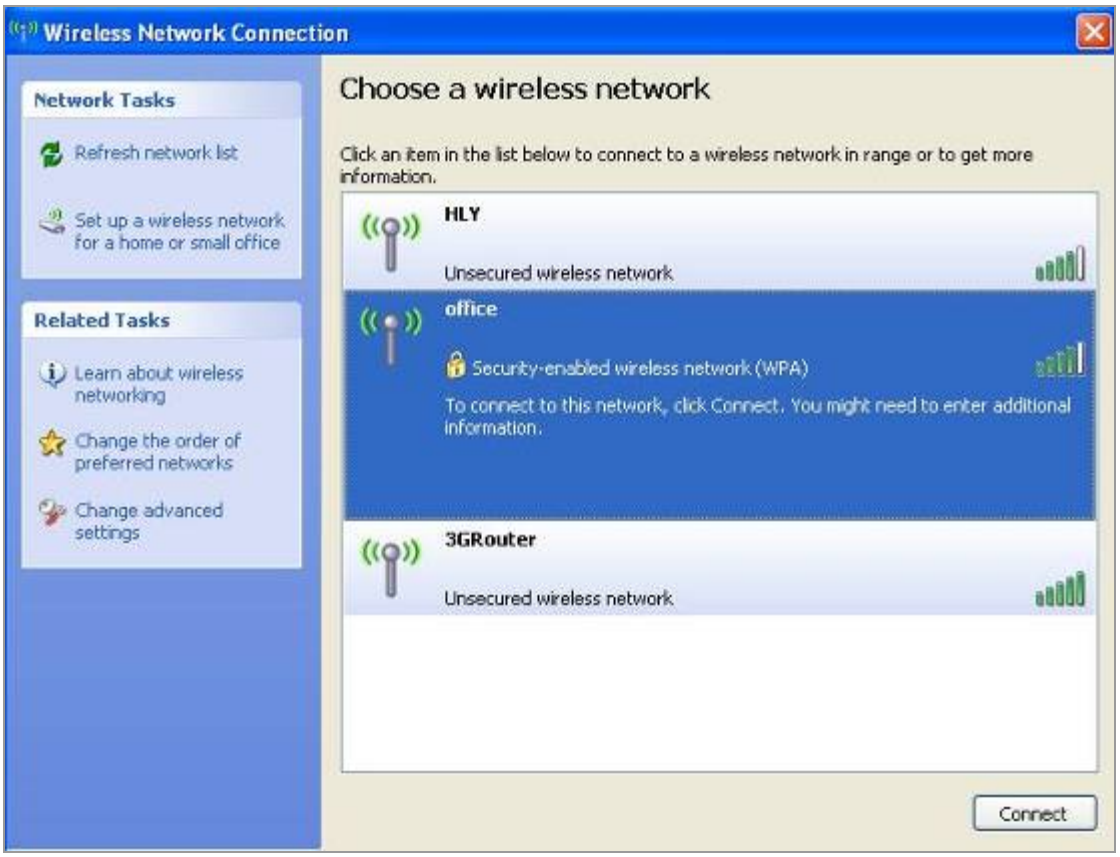


Step 3. Double click "**Network Connections**".

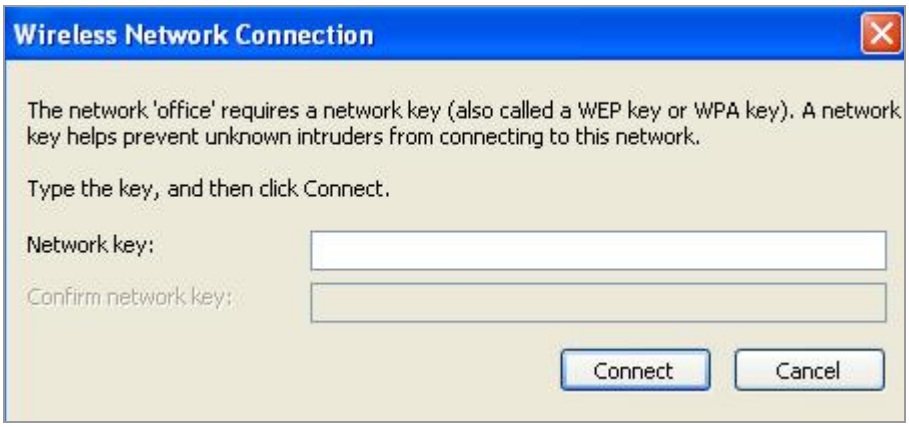

Network and Internet Connections
File Edit View Favorites Tools Help
Back Search Folders
Address Network and Internet Connections
Go
See Also
My Network Places
Printers and Other Hardware
Remote Desktop
Phone and Modem Options
Troubleshooters
Home or Small Office Networking
Internet Explorer
Network Diagnostics
Network and Internet Connections
Pick a task...
Set up or change your Internet connection
Create a connection to the network at your workplace
Set up or change your home or small office network
Set up a wireless network for a home or small office
Change Windows Firewall settings
or pick a Control Panel icon
Internet Options
Network Connections
Network Setup Wizard
Windows Firewall
Wireless Network Setup Wizard

Step 4. Right-click "**Wireless Network Connection**" (it may have a number as suffix if you have more than one wireless network adapter, please make sure you right-click the **PLANET Wireless LAN 802.11n USB Network Adapter**), then select "**View Available Wireless Networks**".

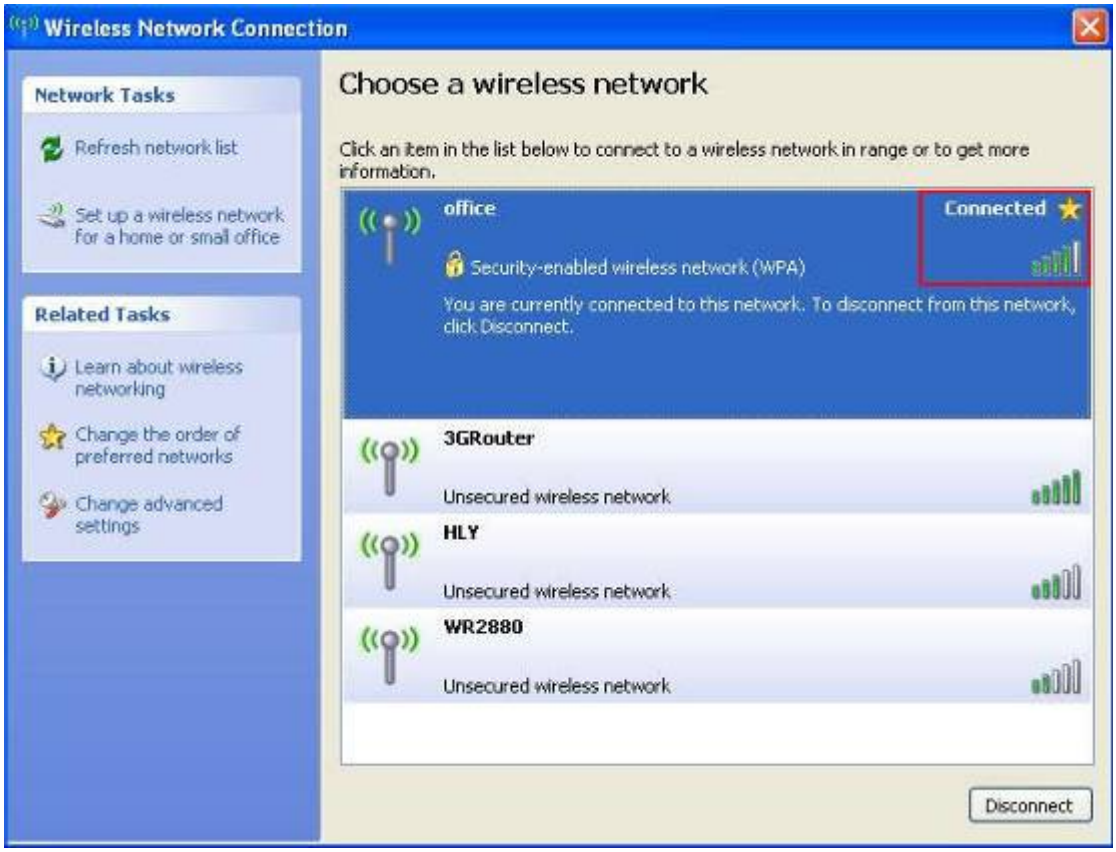
Step 5. All wireless access points in proximity will be displayed here. If the access point you want to use is not displayed here, please try to move your computer closer to the access point, or you can click "**Refresh network list**" to rescan access points. Click the access point you want to use if it's shown, then click "**Connect**".


Wireless Network Connection
Network Tasks
Refresh network list
Set up a wireless network for a home or small office
Related Tasks
Learn about wireless networking
Change the order of preferred networks
Change advanced settings
Choose a wireless network
Click an item in the list below to connect to a wireless network in range or to get more information.
HLY
Unsecured wireless network
office
Security-enabled wireless network (WPA)
To connect to this network, click Connect. You might need to enter additional information.
3GRouter
Unsecured wireless network
Connect

Step 6. If the access point is protected by encryption, you have to input its Network key or passphrase here. It must match the encryption setting on the access point. If the access point you selected does not use encryption, you'll not be prompted for network key or passphrase.


Wireless Network Connection
The network 'office' requires a network key (also called a WEP key or WPA key). A network key helps prevent unknown intruders from connecting to this network.
Type the key, and then click Connect.
Network key:
Confirm network key:
Connect
Cancel

Step 7. If you can see "**Connected**" message, the connection between your computer and wireless access point you selected is successfully established.


Wireless Network Connection
Network Tasks
Refresh network list
Set up a wireless network for a home or small office
Related Tasks
Learn about wireless networking
Change the order of preferred networks
Change advanced settings
Choose a wireless network
Click an item in the list below to connect to a wireless network in range or to get more information.
office
Connected
Security-enabled wireless network (WPA)
You are currently connected to this network. To disconnect from this network, click Disconnect.
3GRouter
Unsecured wireless network
HLY
Unsecured wireless network
WR2880
Unsecured wireless network
Disconnect

3.2.2 Windows 7 - Use Windows 7 WLAN AutoConfig

WLAN AutoConfig service is built-in in Windows 7 that can be used to detect and connect to wireless network. This built-in wireless network connection tool is similar to wireless zero configuration tool in Windows XP.

Step 1: Right-Click on the **network icon** displayed in the system tray

Step 2: Highlight and select the wireless network (**SSID**) to connect.

(1) All wireless access points in proximity will be displayed here. If the access point you want to use is not displayed here, please try to move your computer closer to the access point, or you can click "**Refresh network list**" to rescan access points.

(2) Click the access point you want to use if it's shown, then click "**Connect**".

Note

If you will be connecting to this Wireless Router in the future, checking [**Connect automatically**].

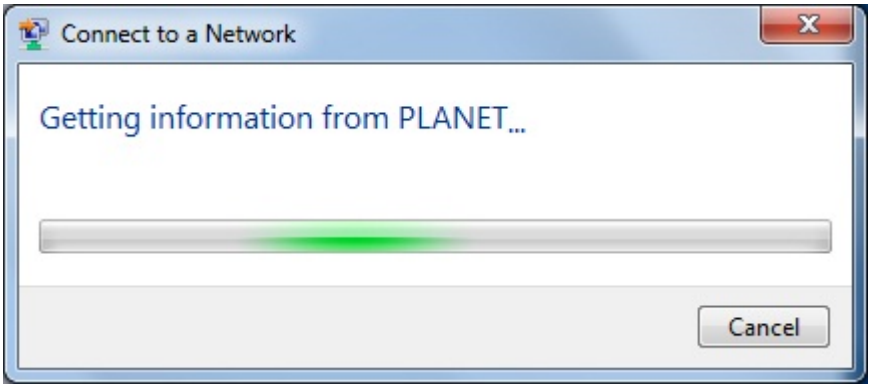
Step 3: Enter the **network security key** of the wireless access point.

(1) The Connect to a Network box will appear

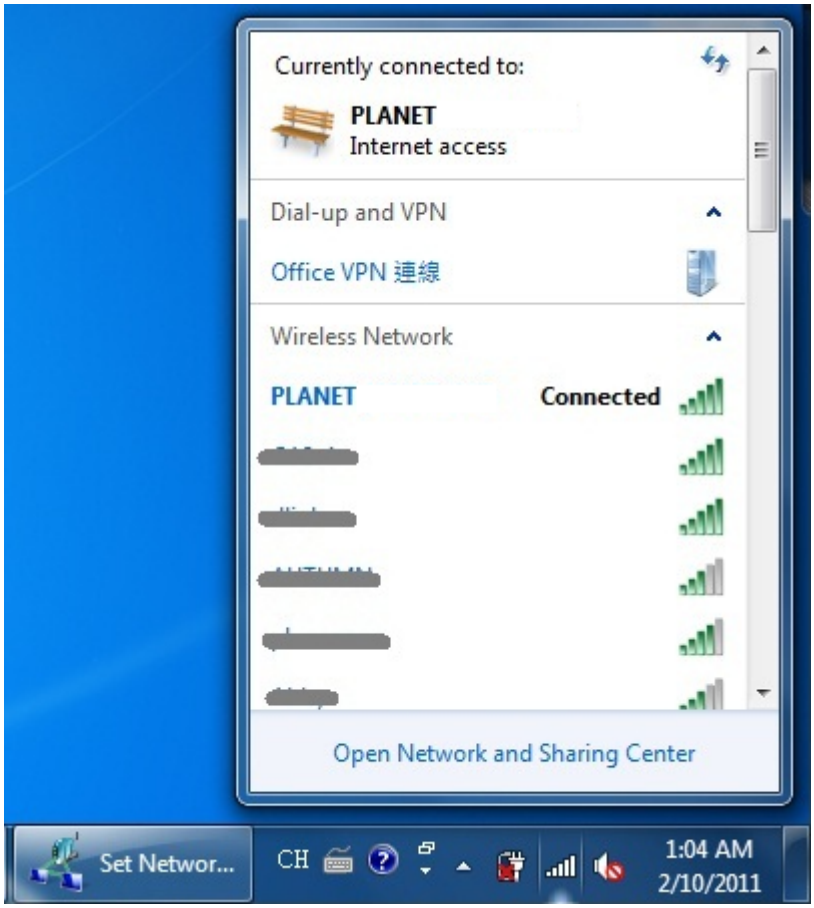
(2) Enter the **security key**

If the access point is protected by encryption, you have to input its Network key or passphrase here. It must match the encryption setting on the access point.

(3) Click the [**OK**] button



Step 4: Check if "**Connected**" is displayed

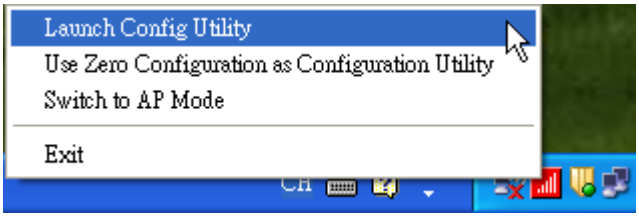

Currently connected to:
PLANET
Internet access
Dial-up and VPN
Office VPN 連線
Wireless Network
PLANET
Connected
Open Network and Sharing Center
Set Networ...
CH
1:04 AM
2/10/2011

Chapter 4. PLANET USB WIRELESS LAN UTILITY

4.1 Connection Profile Management

If you need to connect to different wireless access points at different time, like access point at home, office, cyber-cafe, or public wireless service, you can save the connection parameters (encryption, passphrase, security, etc.) as profiles for every access point, so you don't have to input these parameters every time when you want to connect to the specific wireless access point.

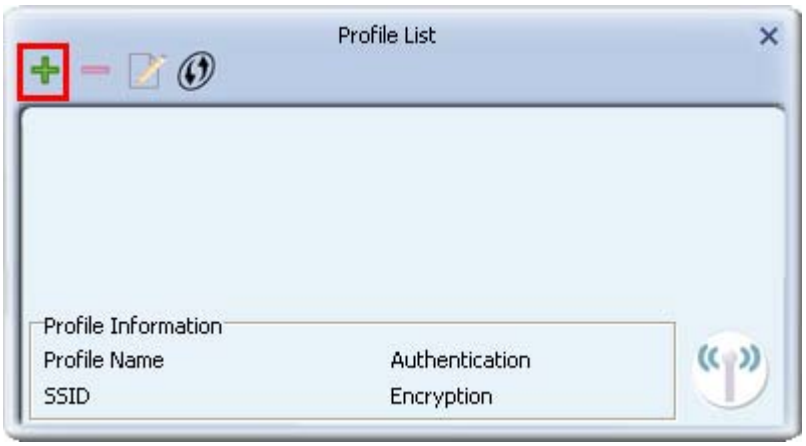
To manage profiles, right-click the PLANET wireless utility icon located at lower-right corner of the screen, then click "**Launch Config Utility**".



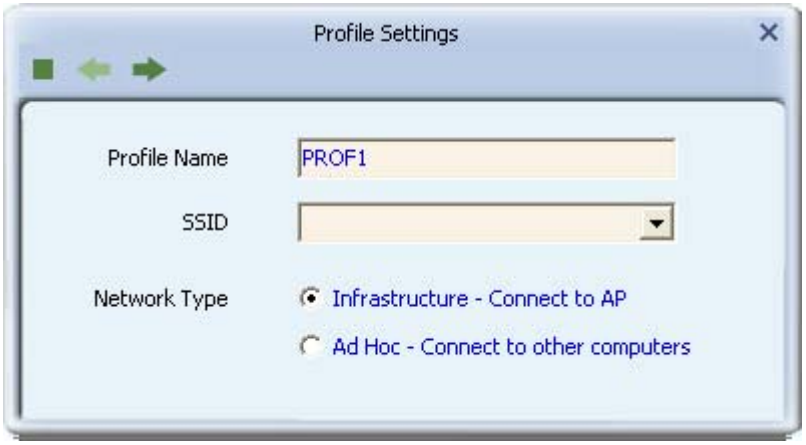
Click the "**Profile Settings**" button.

4.1.1 Add a new profile

You can setup the connection parameters for the specific wireless access point in advance. If you want to create a new profile, click "**Add**" icon.



You'll be prompted to input connection parameters for the wireless access point you wish to connect:



Required parameters are as follows:

Object	Description
• **Profile name**	You can give a name to this profile, so you can remember its purpose easily. It can be any phrase to help you remember.
• **Network Name (SSID)**	The **SSID** (Service Set Identifier, i.e. access point's name). This field will be filled as the access point you selected when SSID is not hidden and grayed out. If SSID is hidden, you have to input correct SSID you yourself.
• **Infrastructure – Connect to AP**	This operation mode requires the presence of an 802.11 Access Point. All communication is done via the Access Point or Router.
• **Ad-Hoc – Connect to other computers**	Check this box if you wish to connect to another computer / network device by ad-hoc method. When not accessing to wireless access point, you have to check this box.
• **Authentication**	Select the authentication type from drop-down menu. This setting must be identical with the setting of wireless access point you with to connect. **Open** – No authentication is needed among the wireless network.

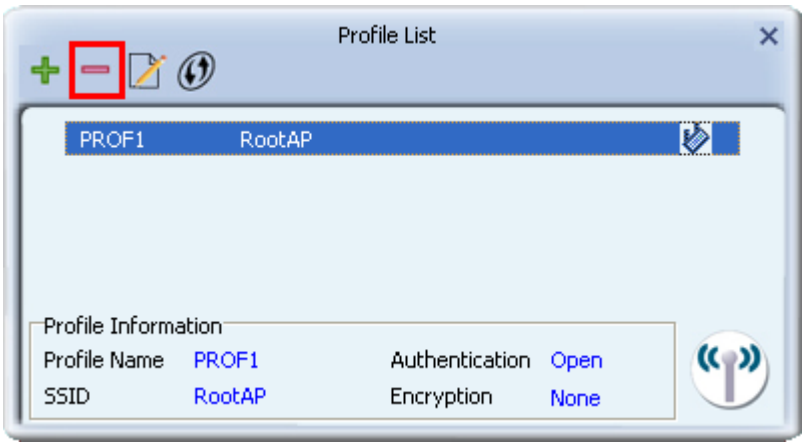
	Shared – Only wireless devices using a shared key (WEP Key identified) are allowed to connecting each other. **WPA –** WPA provides a scheme of mutual authentication using either IEEE 802.1x/Extensible Authentication Protocol (EAP) authentication or pre-shared key (PSK) technology. It provides a high level of assurance to enterprises, small businesses and home users that data will remain protected and that only authorized users may access their networks. For enterprises that have already deployed IEEE 802.1x authentication, WPA offers the advantage of leveraging existing authentication databases and infrastructure. **WPA-PSK** – It is a special mode designed for home and small business users who do not have access to network authentication servers. In this mode, known as Pre-Shared Key, the user manually enters the starting password in their access point or gateway, as well as in each wireless station in the network. WPA-PSK takes over automatically from that point, keeping unauthorized users that don't have the matching password from joining the network, while encrypting the data traveling between authorized devices. **WPA2** – Like WPA, WPA2 supports IEEE 802.1 x/EAP authentications or PSK technology. It also includes a new advanced encryption mechanism using the Advanced Encryption Standard (AES). AES is required to the corporate user or government users. The difference between WPA and WPA2 is that WPA2 provides data encryption via the AES. In contrast, WPA uses Temporal Key Integrity Protocol (TKIP). **WPA2-PSK –** WPA2-PSK is also for home and small business. The difference between WPA-PSK and WPA2-PSK is that WPA2-PSK provides data encryption via the AES. In contrast, WPA-PSK uses Temporal Key Integrity Protocol (TKIP). **802.1X –** 802.1x wireless authentication.
• **EAP Method / Tunnel Authentication / Tunnel ID**	When select 802.1X, you have to select EAP method, Tunnel authentication, and Tunnel ID from dropdown menu. This setting must be identical with your 802.1x authentication server.
• **Encryption**	**None** – Disable the encryption mode. **WEP** – Enable the WEP Data Encryption. When the item is selected, you have to continue setting the WEP Encryption

	keys. **TKIP** – TKIP (Temporal Key Integrity Protocol) changes the temporal key every 10,000 packets (a packet is a kind of message transmitted over a network.) This insures much greater security than the standard WEP security. **AES** – AES has been developed to ensure the highest degree of security and authenticity for digital information and it is the most advanced solution defined by IEEE 802.11i for the security in the wireless network. Note: All devices in the network should use the same encryption method to ensure the communication.
• **Default Key (Key index)**	Select WEP key index. For most of access points you can select "1", but please refer to the setting of the access point.
• **Key Format**	When the encryption type is "WEP", it's required to input a set of "passphrase" to connect to wireless access point. Check "ASCII" or "PASSPHRASE" depends on the security setting of access point, and input it in the box; if you select "PASSPHRASE" you also need to select the length of the key. The passphrase must be identical with the setting of wireless access point you with to connect.
• **WEP Key**	The WEP keys are used to encrypt data transmitted in the wireless network.
• **WPA Preshared Key**	The WPA-PSK key can be from 8 to 64 characters and can be letters or numbers. This same key must be used on all of the wireless stations in the network.
• **Show Password**	Check this box and all passphrases or security keys you inputted will be displayed as you type, but not replace your input with asterisk.

When all required parameters are set, click "**Right arrow**" icon to create and save a new profile.

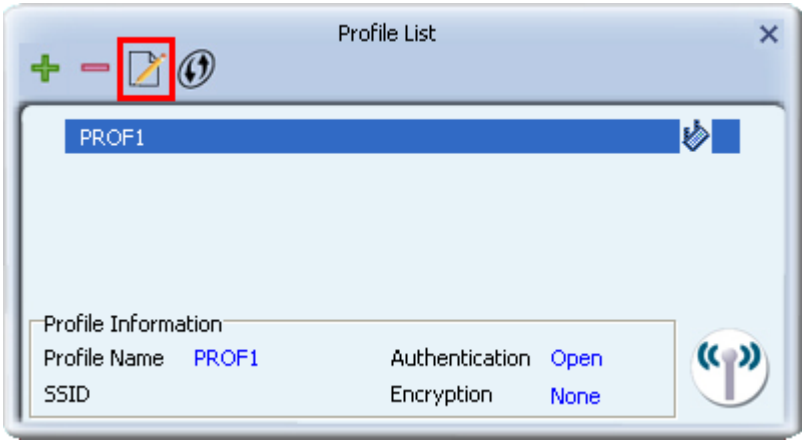
4.1.2 Remove an existing profile

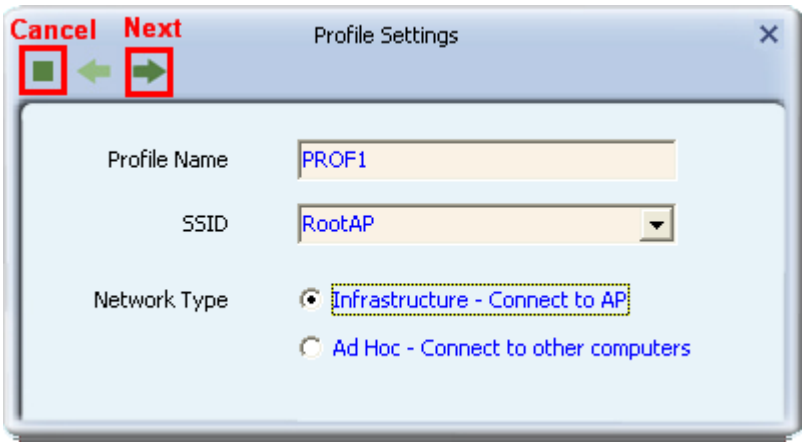
If you want to remove a profile no longer needed, click "**Profile Settings**" button, then select the existing profile you wish to remove, and click "**Delete**" icon.



4.1.3 Edit an existing profile

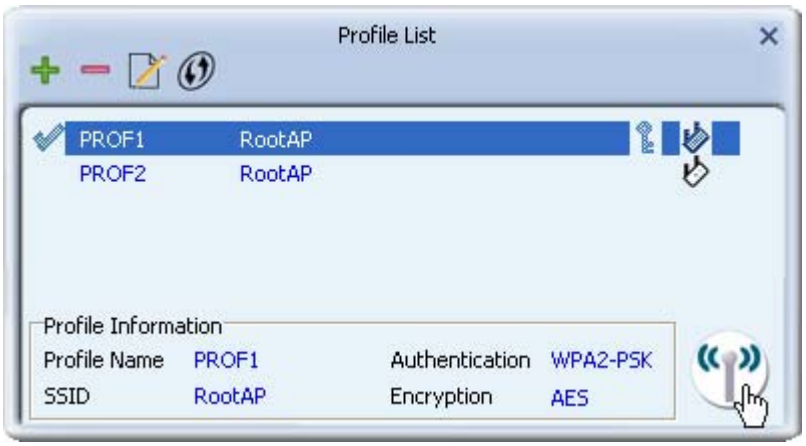
If you have added a profile before, and now you wish to change the settings of the profile, you can use this function. Please select the profile from the list first, then click "**Edit**" button. The contents of the selected profile will appear. After editing them, you can click "**Right arrow**" icon to save changes, or click "**Cancel**" to discard changes.





4.1.4 Set as the default profile

If you wish to use a specific profile as the default wireless connection, you can select the profile in the list, and click "**Active**". The selected profile will become default selection and PLANET wireless utility will attempt to connect to the selected access point.



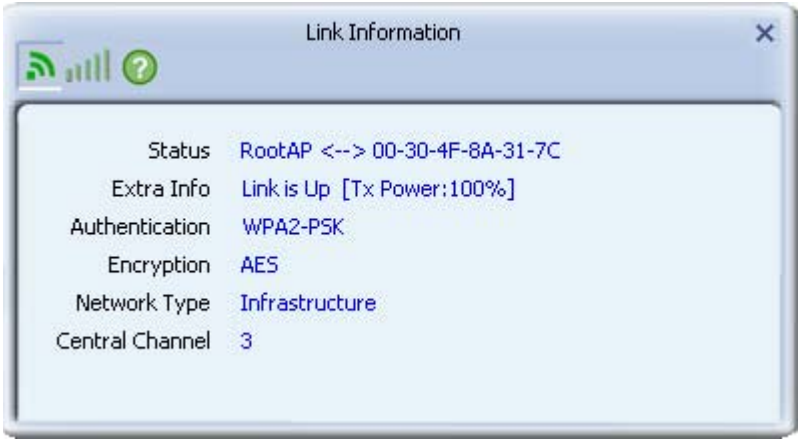
4.2 General Information, Status, and Network Statistics

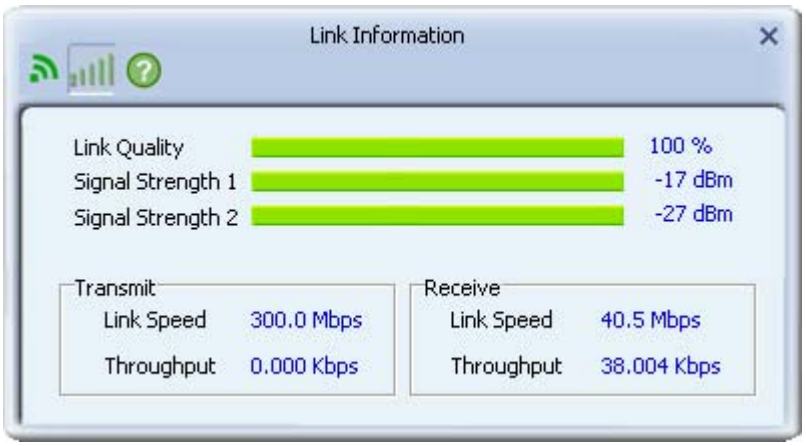
The PLANET wireless utility provides the detailed information about the wireless connection you're using.

4.2.1 General Information

If you want to know the general information of the access point you're connecting to, click "**Link Information**" icon.

All general information like signal strength and link quality will be displayed here. The information is very useful when you encounter some problems in connecting to access point.





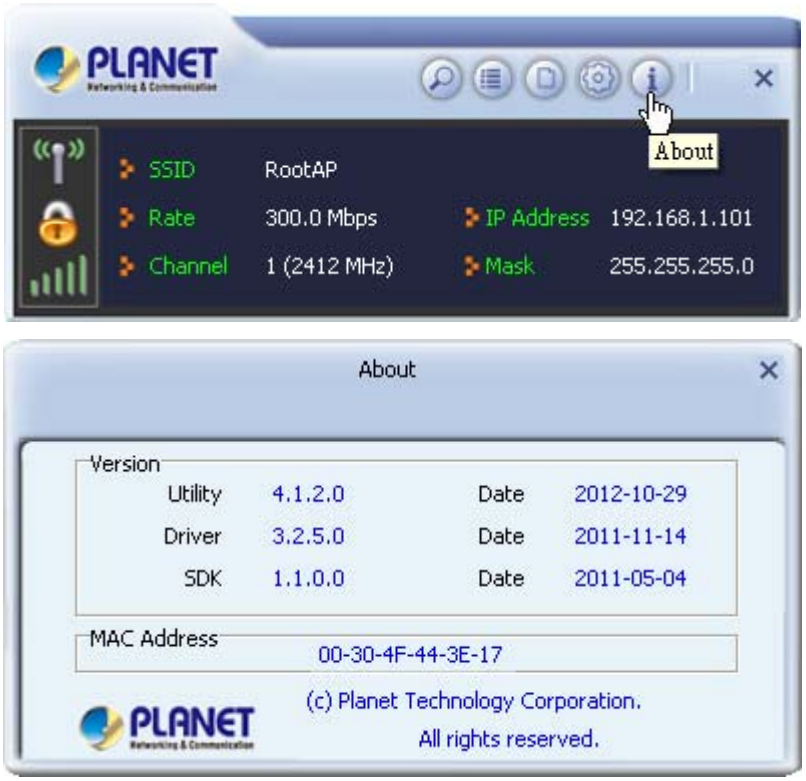
4.2.2 Network Transmission Statistics

To view the statistical data of wireless adapter, click "**Statistics**" icon, and the statistics of wireless connection will be displayed:

All connection-related statistics is displayed here. You can click "**Reset Counter**" button to reset the statistics of all items back to 0.

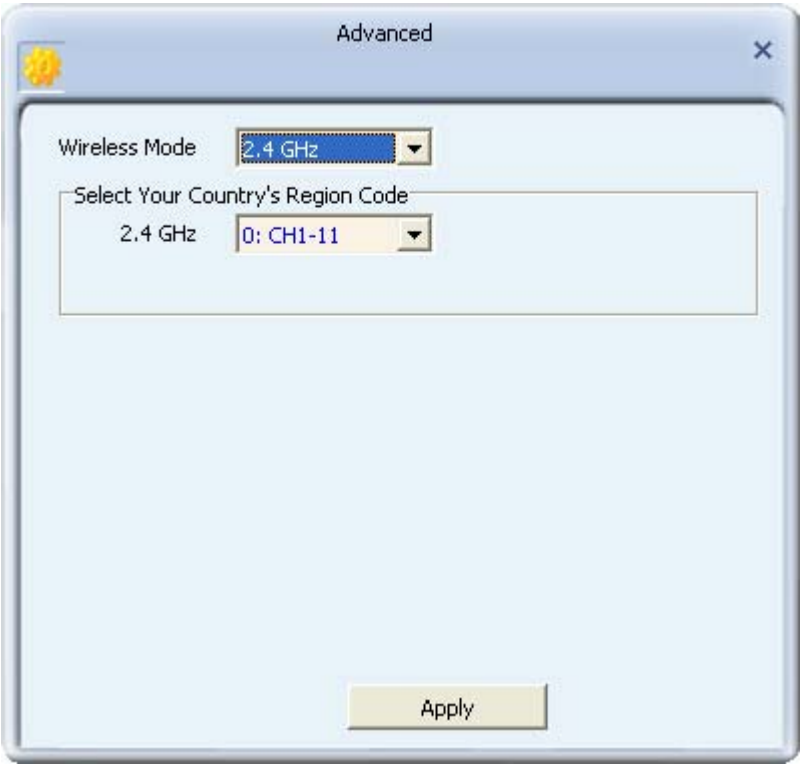
4.2.3 About / Status

If you want to know the status of your wireless network card, click "**About**" icon.



4.3 Advanced Settings

This section is used to configure advanced settings including channel selection, wireless mode, and certificate management.



The descriptions of the function are listed as follow:

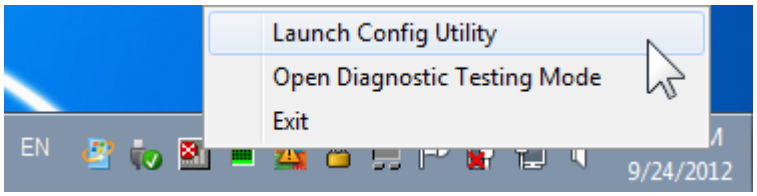
Object	Description
Wireless Mode	Display the wireless operation mode of the network card.
Select Your Country's Region Code	2.4 GHz: From the drop down list, select the appropriate code for your region. If uncertain, leave this setting at its default value.
Apply	Click Apply to save your changes.

4.4 Wi-Fi Protected Setup (WPS)

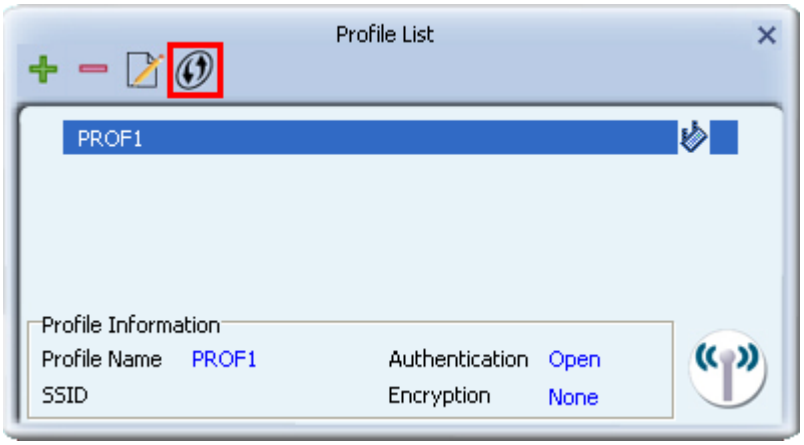
Wi-Fi Protected Setup (WPS) is the latest wireless network technology which makes setting up wireless network more quickly and easily. If you have WPS-supported wireless access point, and you want to establish a secure connection to it, you don't have to configure the wireless access point and setup data encryption by your own self.

There are two kinds of WPS method supported, "**PIN Input Config (PIN)**" and "**Push Button Config (PBC)**". Please follow the instructions below to establish the secure connection between WPS-supported wireless access point and the PLANET wireless adapter.

Step 1. Right-click PLANET wireless utility icon, and click "**Launch Config Utility**".



Step 2. Go to **Profile List**, and then click "**WPS**" icon.



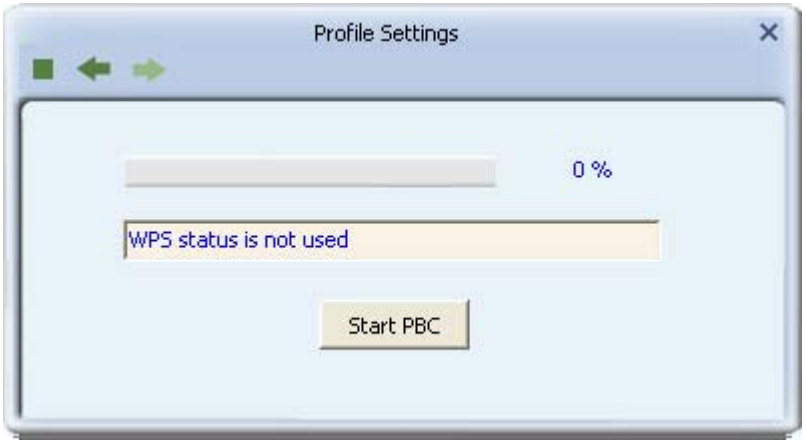
Step 3. You can choose which WPS method to use, **Push-Button Configuration(PBC)** or **PIN / numeric code**, and WPS-supported wireless access point must use the same method. See the next two chapters for detailed instructions of each WPS method.

4.4.1 Push Button Config (PBC)

This is the easiest way to establish secure connection by WPS, but if there're more than one WPS-supported access point using Push-Button config, please use **PIN / numeric code** instead.

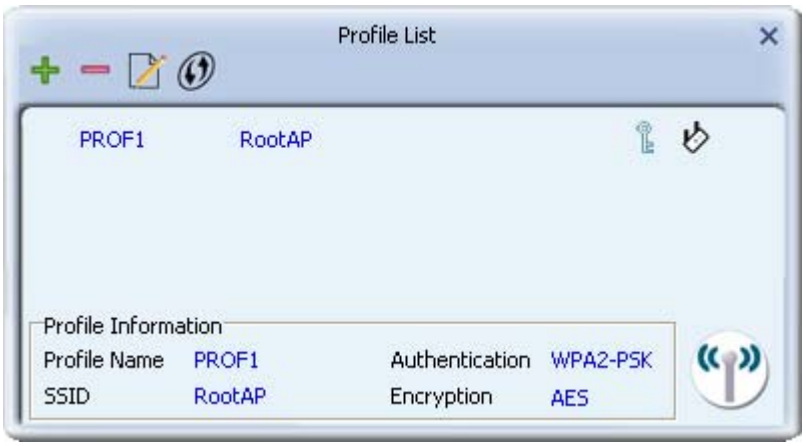
a. To use the PBC method, select "**Push-Button Configuration(PBC)**". Click the right arrow to save your settings.

b. Click "**Start PBC**". At the same time (within 120 seconds) click the WPS button on the device to which you are connecting.



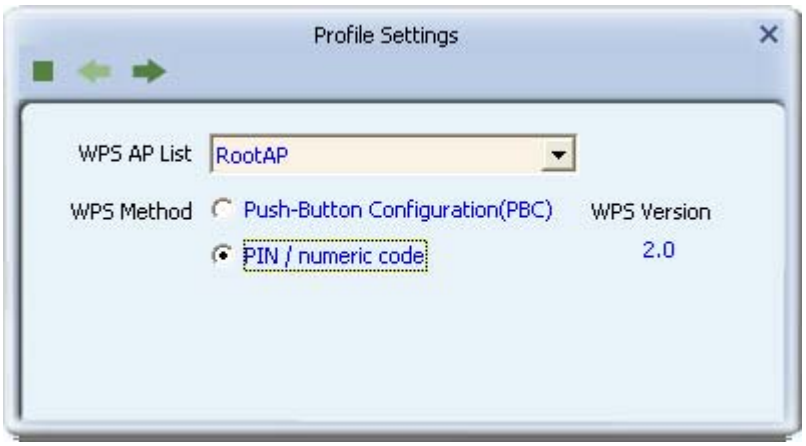
Please activate WPS function of wireless access point now, and the secure connection between wireless adapter and the WPS-supported access point will be established automatically.

c. Once connected, your WPS profile appears in the Profile List screen.



4.4.2 PIN Input Config (PIN)

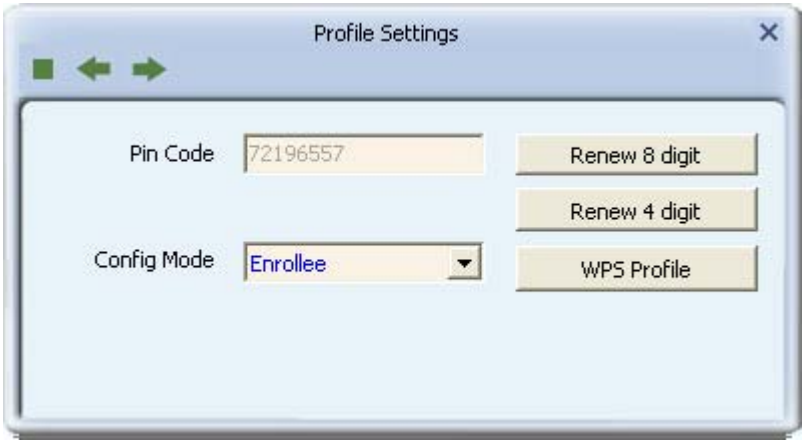
a. To use the PIN method, select "**PIN / numeric code**" and, in the "**WPS AP List**" field, select the name of the network to which you connecting. Click the right arrow to save your settings.



b. You can use either the PIN provided by the Wireless Utility or the PIN provided by the device to which you are connecting.

- **PIN provided by the Wireless Utility.**

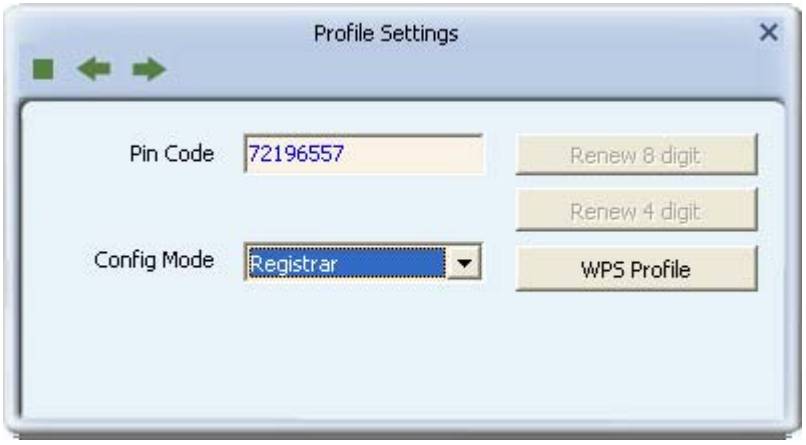
  If the device to which you are connecting requires a PIN, in the '"**Config Mode**" field, from the drop-down list, select "**Enrollee**". Your PIN is displayed in the "**Pin Code**" field on your Utility. Then in the corresponding WPS interface on the device, to which you are connecting, enter your PIN in its PIN entry field.



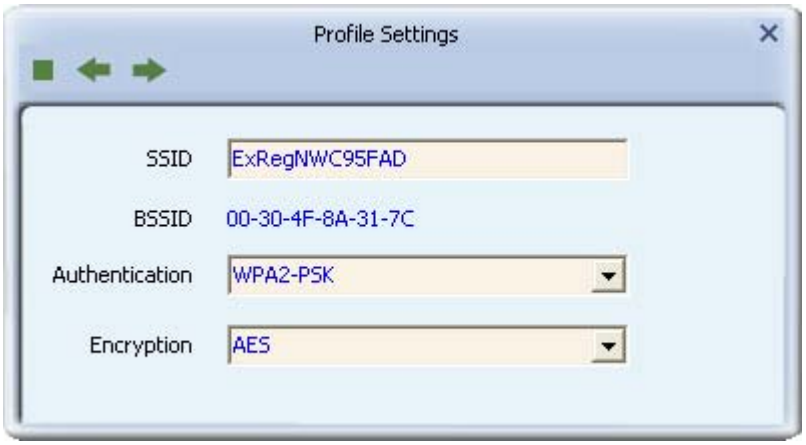
- **PIN provided by the device to which you connecting.**

  If the device to which you are connecting provides a PIN (e.g. on the device casing), in the "**Config Mode**" field, select "**Registrar**". In the "**Pin Code**" field, type the PIN provided by the device to which you are connecting.

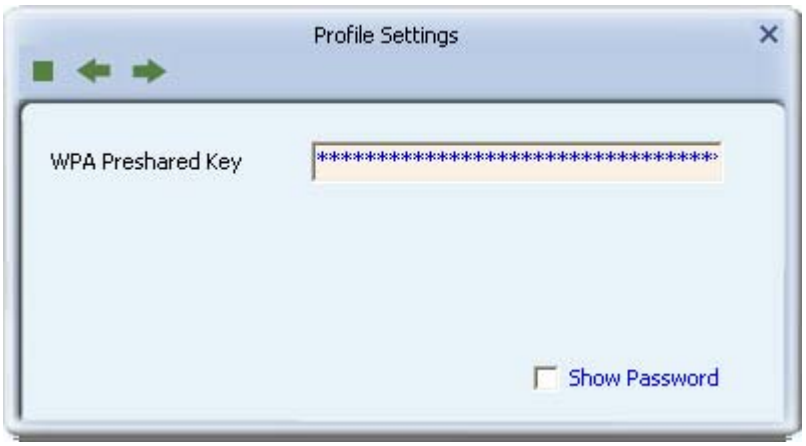
  To optionally configure the connection name and security type on your WPS connection, click the "**WPS Profile**" button. Otherwise leave settings at their default and click the right arrow to save your settings.



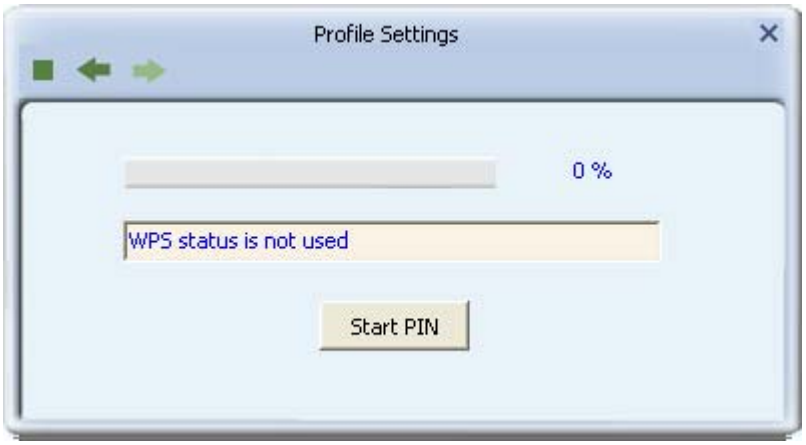
  If you click on the "**WPS Profile**" button, the following screen appears, allowing you to configure the name of your network connection and security method. In "**SSID**" type a name for your WPS connection, and select an Authentication and Encryption method.



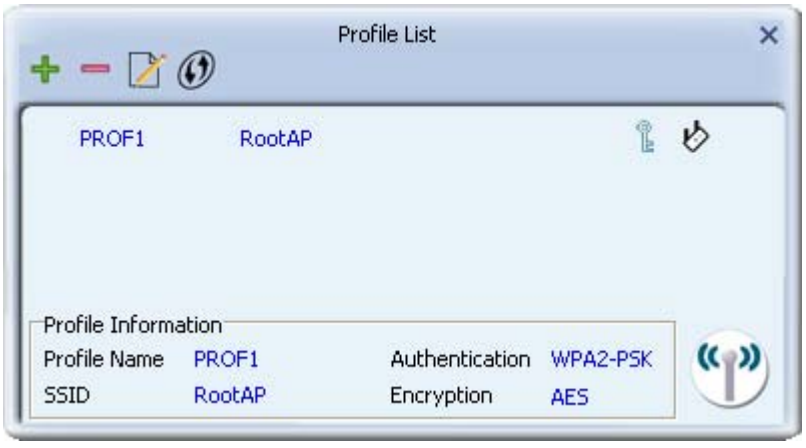
  In the "**WPA Preshared Key**" field, type a passphrase 8-63 characters long made up of characters '0'-'9', 'a'-'z', 'A'-'Z', keyboard symbols and spaces. Click the right arrow to save your settings.



c. For both PIN methods, the following screen displays. Click the **Start PIN** button. At the same time (within 120 seconds) activate the corresponding WPS PIN connection function on the device to which you are connecting.



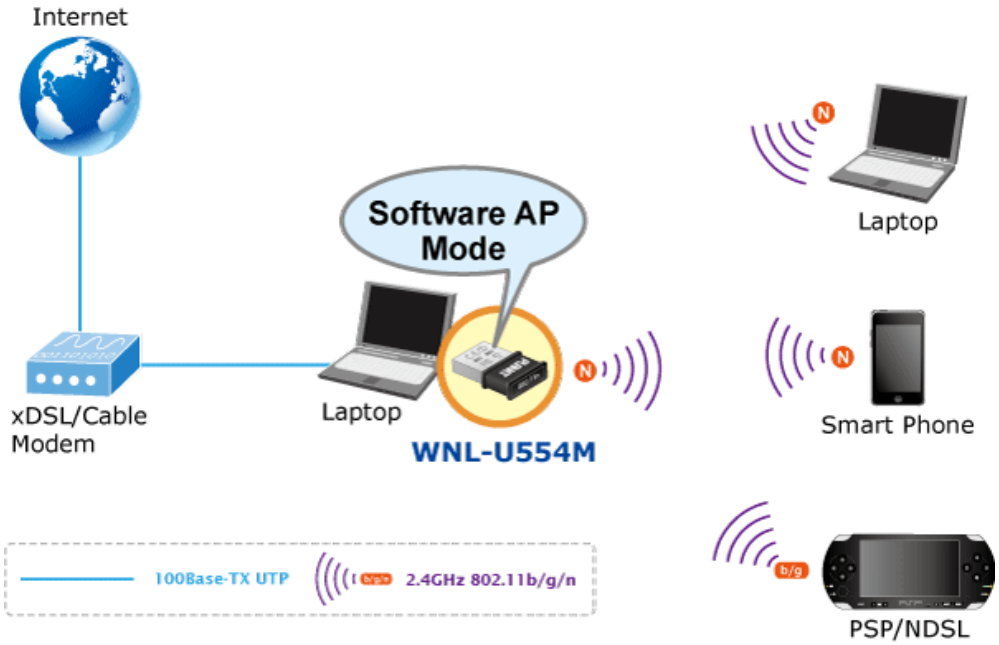
d. Once connected, your WPS profile appears in the Profile List screen.



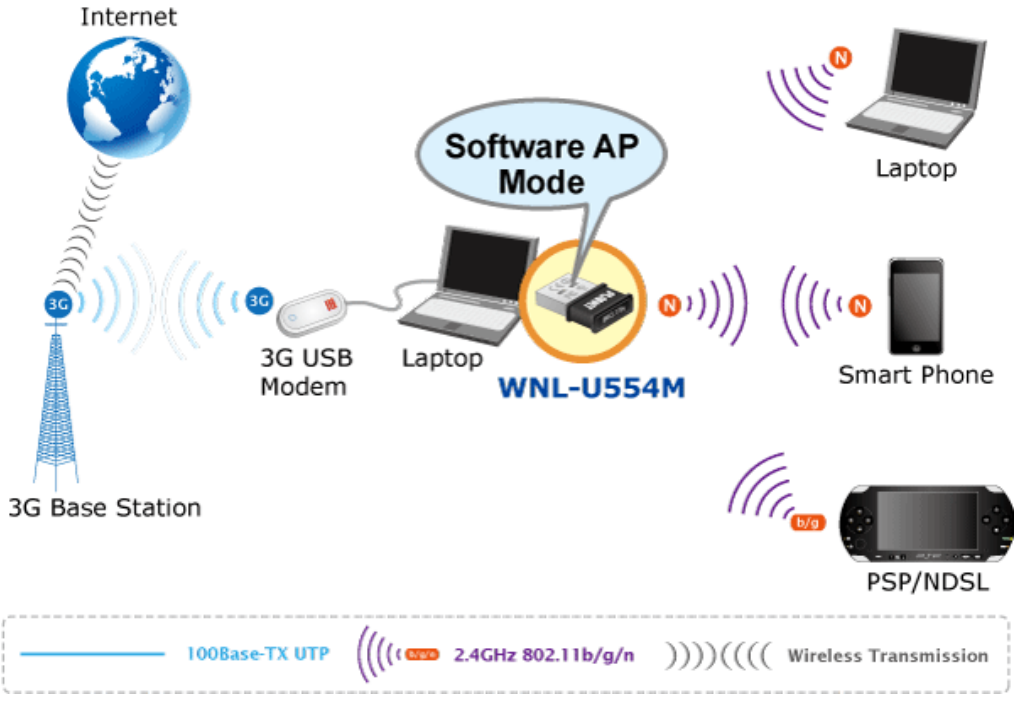
Chapter 5. SOFT ACCESS POINT MODE

Excepting be a wireless client of other wireless access points, the PLANET wireless adapter can also act as a wireless service provider. You can switch the operation mode of wireless adapter to "**Access Point**" mode to simulate the function of a real wireless access point by software. And all other computers and Wi-Fi supported devices can connect to your computer wirelessly, even share your internet connection service.

■ Application: Software AP Mode with xDSL/Cable Internet Connection



■ Application: Software AP Mode with 3G/LTE Internet Connection

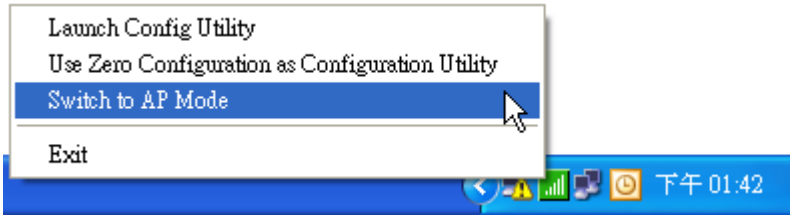


5.1 Switch between Access Point Mode and Station Mode

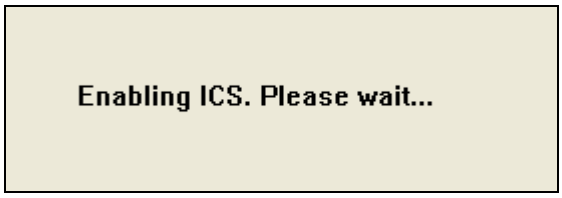
The default operating mode of the wireless adapter is “**Station Mode**” (being a client of other wireless access points).

Please follow the instructions below to switch to Access Point mode:

Step 1. Right-click PLANET wireless utility icon, and select “**Switch to AP Mode**”.



It requires few seconds to switch mode.



After the mode switch is complete, the window of general information about software access point will appear, includes SSID, IP address of the Soft AP and connected wireless clients.

Also the wireless LAN Utility icon in you system tray (lower-right corner) be changed to another icon.

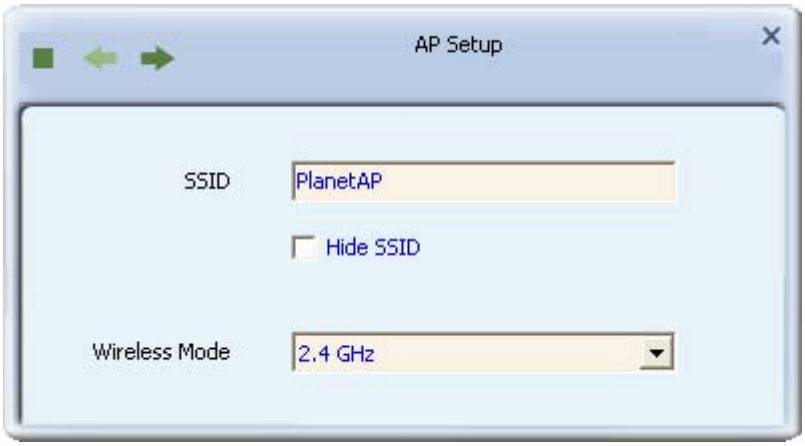
Station mode icon.

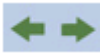
Access Point icon.

5.1.1 Configure SSID and Channel

To configure software Access Point, click "**Config**" button, and the "**Wireless Network Properties**" will be displayed.

a. The Network Settings Screen



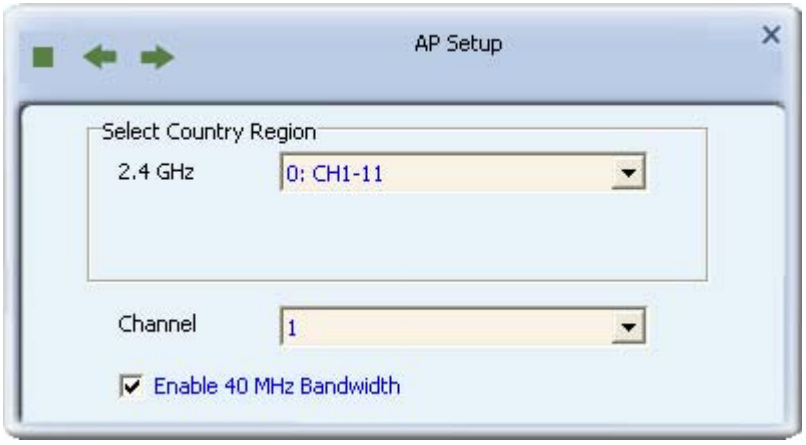

Use the left and right arrows to navigate through the Setup screens.

Click the Stop button to cancel setting up your device.

Please note that Ad-Hoc mode is not available when the wireless adapter is in Access Point mode. The setup options are listed below:

Object	Description
SSID (Network Name)	Please input the SSID (the name used to identify this wireless access point) here. Up to 32 numerical characters can be accepted here, excepting space.
Hide SSID	Select this optional setting to hide the name of your network from unauthorized computers or devices.
Wireless Mode	Please select the wireless operating mode. The option is only 2.4GHz available if the wireless adapter only supported 2.4GHz.

b. The Channel Settings Screen

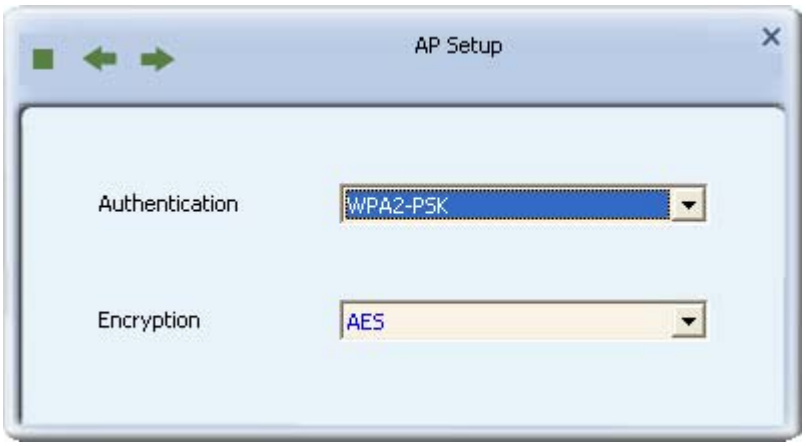


The setup options are listed below:

Object	Description
2.4 GHz	This indicates the 'Wireless Mode' selected in the previous Network Settings screen. From the drop-down list, select the appropriate code for your region. For more information on the channels available for each region, see the Country Channel List. Channel: Leave at its default value, or
Channel	Leave at its default value, or if interference is a problem on your network, choose a channel which experiences less interference. If you select Enable 40 MHz Bandwidth', choose a channel with minimal interference on the four channels adjacent to your selected channel.
Enable 40 MHz Bandwidth	Select this option to increase the bandwidth available for your wireless connection. This function works by incorporating the bandwidth available on the four channels adjacent to your selected channel. This option is only supported by IEEE 802.11n devices. If a computer or device connected to the AP does not support this function, bandwidth is reduced to its default level.

5.1.2 Soft Access Point Security

To setup security options for Soft Access Point, configure "**Wireless Network Security**" as follows:



The setup items about wireless security are listed below:

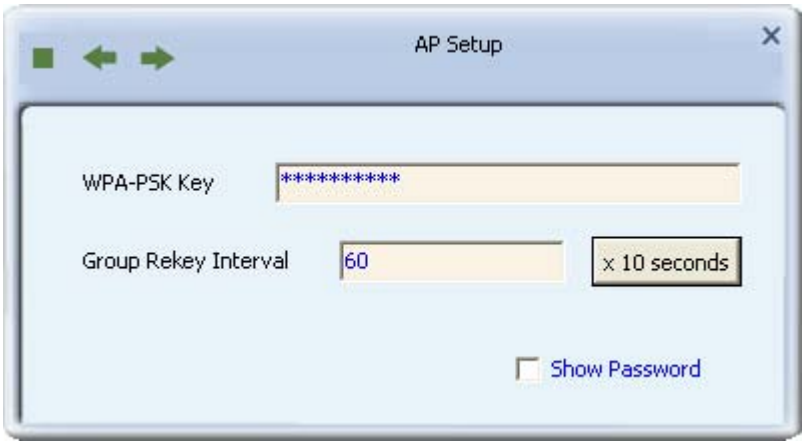
Object	Description
Authentication	Select the strongest security method supported by your network. Options include Open, Shared, WPA-PSK, WPA2-PSK, or WPA-PSK/WPA2-PSK.
Encryption	Select the strongest encryption supported by your network and the selected authentication method. Options for each authentication method are as shown in the following table.
ASCII / PASSPHRASE	If the encryption method is WEP, check either "ASCII" or "PASSPHRASE" box and input it in the box as WEP passphrase.
Key Index	Select WEP key index (1-4). If you don't know which one you should use, select 1.
Network key / Confirm network key	IF network authentication mode is WPA, please input WPA passphrase in both box.

The authentication types are listed below:

Authentication Method	Encryption Method	Description
WPA2-PSK	AES	WPA2-PSK is a faster, more recent authentication standard than WPA-PSK. AES is a stronger, more recent encryption standard than TKIP.
WPA-PSK	TKIP	
WPA-PSK/WPA2-PSK	BOTH (WPA2-PSK only)	Select the strongest security method supported by your network. Options include Open, Shared, WPA-PSK, WPA2-PSK, or WPA-PSK/WPA2-PSK.
Open	WEP	WEP is an older standard and is easily decrypted. If using WEP select Open as the authentication method for slightly stronger

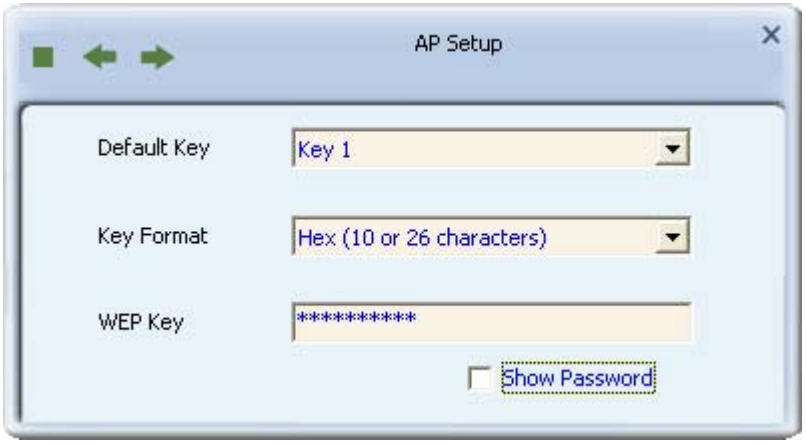
Shared		security.

a. The WPA-PSK, WPA2-PSK or WPA-PSK/WPA2-PSK Security Screen



- WPA-PSK Key: Type a security key 8-63 characters long made up of characters '0'-'9', 'a'-'z', 'A'-'Z', keyboard symbols and spaces.
- Group Rekey Interval: The interval after which the AP resets the group key. This key supports wireless security on your network. If uncertain, leave at its default value.
- x 10 seconds: Sets the unit for the 'Group Key Interval' to 10 seconds. After the specified period the group key is reset.
- x 1000 packets:Sets the unit for theGroup Key Interval to 1000 packets. After sending the specified number of packets the group key is reset.

b. The WEP Security Screen

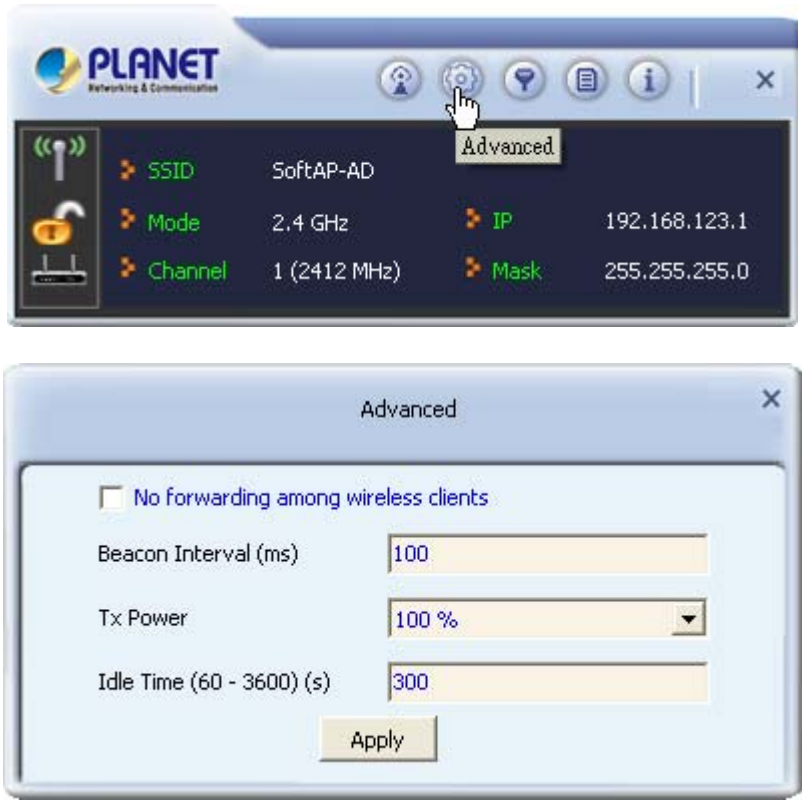


- Default Tx Key: Options are 'Key 1' to 'Key 4'. Select one of these options.
- Key Format: Select a character format for your security passphrase. Options are 'Hex(10 or 26 hex digits)' or 'ASCII(5 or 13 ASCII characters)'.
- WEP Key: Type a security passphrase according to the option you select in the Key Format field.
  - If you select a key format of 'Hex(10 or 26 hex digits)', in the WEP Key field type a security key 10 or 26 characters long made up of digits '0'-'9' and letters 'A'-'F'

- If you select a key format of 'ASCII(5 or 13 ASCII characters)' in the WEP Key field, type a security key 5 or 13 characters long made up of digits '0'-'9' and letters 'a'-'z' and 'A'-'Z'.

5.2 Advanced Settings

Click "**Advanced**" button to setup advanced settings of software access point. If you don't know the meaning and affects of these settings, please keep them as default.



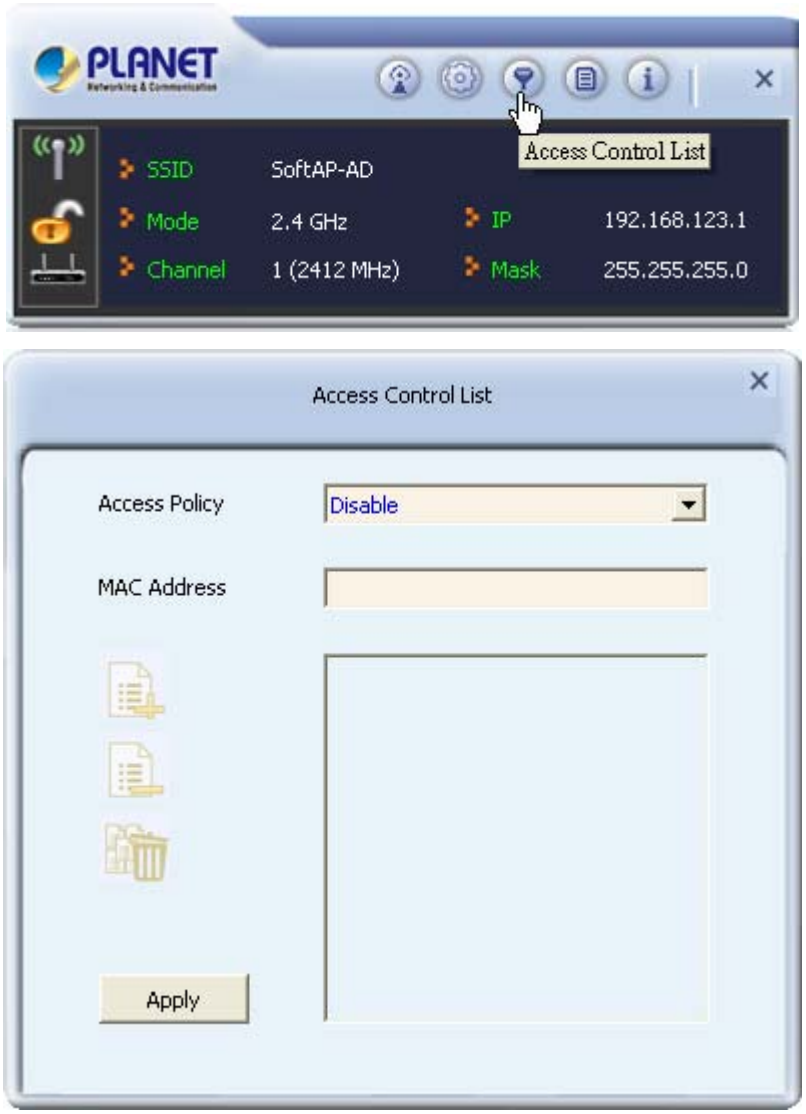
The setup items are listed below:

Object	Description
No forwarding among wireless clients	If selected, this disables the forwarding of packets by the AP or router of packets sent by wireless clients to other wireless clients in the same network.
Beacon Interval (ms)	Default = 100 ms. The interval between beacon frames.
Tx Power	100%. The power of the transmitted signal as a percentage of maximum power. Options include 100%, 75%, 50%, 25%, and Low.
Idle time (60 - 3600) (s)	Default = 300s. The maximum time a connected computer or device can be idle before it is disconnected from the network.
Apply	Click Apply to save your changes.

5.3 Access Control List

If you're not going to open your computer and wireless resources to the public, you can use MAC address filtering function to enforce your access control policy, so only wireless clients with MAC address you defined by this function can be connected to your software access point.

Click "**Access Control List**" button and the following screens will be displayed.



The setup items are listed below:

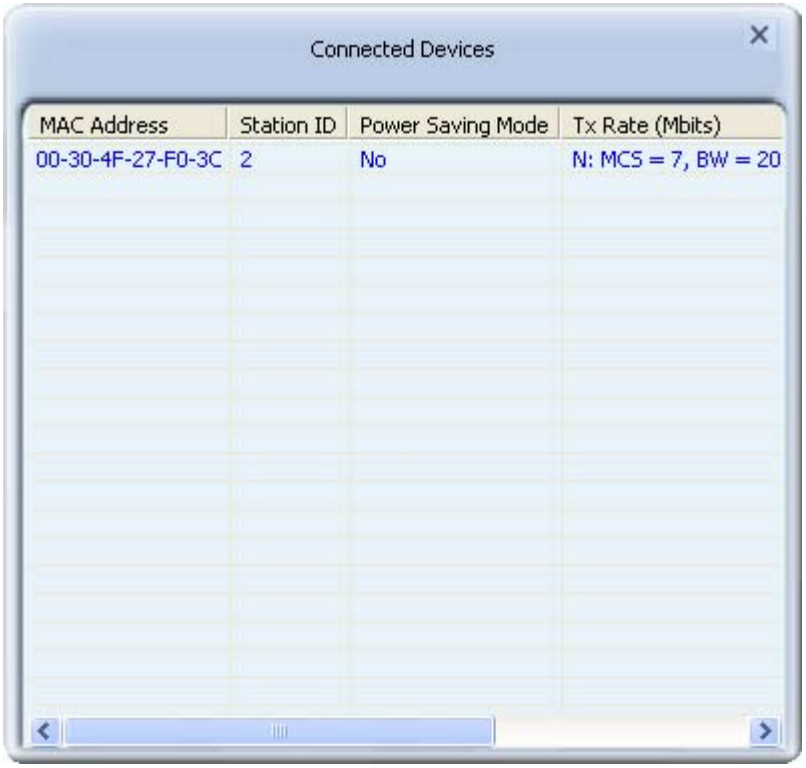
Object	Description
Access Policy	Options include Disable (default), Reject All, and Allow All. **Disable:** Disables access control to your network based on MAC address. **Reject All:** All packets with a source MAC address matching those in the access control list cannot access your network. **Allow All:** All packets with a source MAC address matching those in

	the access control list have access to your network.
MAC Address	Type a MAC address in hexadecimal format without additional characters (e.g. colons or hyphens).
	Adds the MAC address in the MAC Address field to the MAC address control list.
	Removes the selected MAC address from the MAC address control list.
	Removes all MAC addresses from the MAC address control list.
Apply	Saves all changes made to the MAC address control list.

5.4 Connected Devices

If you want to see the list of all wireless clients connected to this access point, please follow the following instructions:

Click "**Connected Devices**" button, and a list containing all connected wireless clients will appear:



The information items are listed below:

Object	Description
MAC Address	The unique hexadecimal manufacturer-assigned identifier of a device connected to the this AP.
Client ID	An ID number assigned to each device on your AP's network, starting at 2 with a maximum of 32.
Power Saving Mode	Indicates whether the connection with the associated device supports power-saving.
Tx Rate (Mbits)	Provides detailed information on factors affecting the data transfer rate. IEEE 802.11n specific information includes the MCS (modulation and coding scheme) index value applied in a connection, the BW (bandwidth), GI (guard interval), and the transmission rate of the current connection in megabits (Mbit).

5.5 About (AP Mode)

The "**About**" screen provides you the information about version number of the configuration utility, driver, and other important information about your wireless access point.

The information items are listed below:

Object	Description
Utility Version	Shows the version number of the Utility (different from the utility version in station mode).
Driver Version	Shows the version number of this driver (the same as that in station mode).
DLL Version	Displays the version number of the RaAPAPI.dll file, for use by downstream developers.
Date	Shows the date of release for the utility version shown.
Date	Shows the date of release for the driver version shown.

Date	Shows the date of release for the DLL version shown.
MAC Address	The unique hexadecimal identifier assigned to the Adapter.

Appendix: Specifications

Product	**150Mbps 802.11n Wireless Micro-size USB Adapter**
Model	**WNL-U554M**
Hardware Specification	
Interface	USB 2.0, Type-A
Antenna Type	Internal Omni-directional Antenna
Antenna Gain	2dBi
Operation Voltage	5V DC, power input from USB port
Dimension	20 x 14.4 x 7mm
Weight	0.3g
Wireless Specification	
Standards Conformance	IEEE 802.11n standard compliant IEEE 802.11b/g backwards compatible
RF Modulation	DBPSK,DQPSK,CCK, OFDM
Frequency Band	2.4-2.4835 GHz
Opt. Channel	America/ FCC: 2.414~2.462GHz (11 Channels) Europe/ ETSI: 2.412~2.472GHz (13 Channels) Japan/ TELEC: 2.412~2.484GHz (14 Channels)
Data Rate	802.11b: 11, 5.5, 2 and 1 Mbps with auto-rate fall back 802.11g: 54, 48, 36, 24, 18, 12, 9 and 6Mbps 802.11n (20MHz): up to 72Mbps 802.11n (40MHz): up to 150Mbp
Wireless Transmit Power (EIRP)	≦20 dBm (EIRP)
Receiver Sensitivity	135M: -68dBm@10% PER 108M: -68dBm@10% PER 54M: -68dBm@10% PER 11M: -85dBm@8% PER 6M: -87dBm@8% PER 1M: -90dBm@8% PER
Operating Mode	Ad-Hoc / Infrastructure, Soft AP
Encryption Security	WEP 64/128-bit WPA / WPA2 (TKIP/AES) WPA-PSK / WPA2-PSK (TKIP/AES)
Wireless Advanced	Supports 802.11e WMM (Wi-Fi Multimedia) Supports Software/Hardware WPS (Wi-Fi Protected Setup)
Management	The utility included in the package or Windows XP Zero Configuration

	utility
Operating systems	Windows 2000/XP (x86/x64) / VISTA (x86/x64) / Win7 (x86/x64) Linux Kernel 2.4 /2.6 Macintosh 10.4/10.5/10.6
Certification	
Regulatory	CE, FCC, RoHS
Environment	
Operating Temperature	0 - 40 Degree C
Humidity	10 - 90% (Non-Condensing)
Package Content	■ WNL-U554M(150Mbps 802.11n Wireless Micro-Size USB adapter) ■ Quick Installation Guide ■ CD (includes driver/utility/user's manual)

Appendix: Troubleshooting

Symptom :	The LED is off.
Remedy :	Make sure the PC Card is inserted properly. Otherwise contact your vendor.
Symptom :	**The LED is always on not blinking.**
Remedy :	Make sure that you have installed the driver from attached CD. Otherwise contact your vendor.
Symptom :	The LED is blinking but the PC Card icon does not appear in your icon tray.
Remedy :	Make sure that you have installed the Utility from the attached CD.
Symptom :	The PC Card is linking, but can't share files with others.
Remedy :	Make sure the **file and printer sharing** function is enabled. You can enable the function by checking the icon of **My Computer -> Control Panel -> Network -> file and printer sharing -> I want to be able to give others to access to my files**.
Symptom :	Slow or poor performance under AP mode
Remedy :	Try to select another channel for the communicating group or move your device closer to the Access Point.

Appendix: Glossary

1. IEEE 802.11 Standard

The IEEE 802.11 Wireless LAN standards subcommittee, which is formulating a standard for the industry.

2. Access Point

An internetworking device that seamlessly connects wired and wireless networks together.

3. Ad Hoc

An Ad Hoc wireless LAN is a group of computers, each with a WLAN adapter, connected as an independent wireless LAN

Ad Hoc wireless LAN is applicable at a departmental scale for a branch or SOHO operation.

4. BSSID

A specific Ad Hoc LAN is called a Basic Service Set (BSS). Computers in a BSS must be configured with the same BSSID.

5. DHCP

Dynamic Host Configuration Protocol - a method in which IP addresses are assigned by server dynamically to clients on the network. DHCP is used for Dynamic IP Addressing and requires a dedicated DHCP server on the network.

6. Direct Sequence Spread Spectrum

This is the method the wireless cards use to transmit data over the frequency spectrum. The other method is frequency hopping. Direct sequence spreads the data over one frequency range (channel) while frequency hopping jumps from one narrow frequency band to another many times per second.

7. ESSID

An Infrastructure configuration could also support roaming capability for mobile workers. More than one BSS can be configured as an Extended Service Set (ESS). Users within an ESS could roam freely between BSSs while served as a continuous connection to the network wireless stations and Access Points within an ESS must be configured with the same ESSID and the same radio channel.

8. Ethernet

Ethernet is a 10/100Mbps network that runs over dedicated home/office wiring. Users must be wired to the network at all times to gain access.

9. Gateway

A gateway is a hardware and software device that connects two dissimilar systems, such as a LAN and a mainframe. In Internet terminology, a gateway is another name for a router. Generally a gateway is used as a funnel for all traffic to the Internet

10. IEEE

Institute of Electrical and Electronics Engineers Infrastructure. An integrated wireless and wired LAN is called an Infrastructure configuration. Infrastructure is applicable to enterprise scale for wireless access to central database, or wireless

11. ISM Band

The FCC and their counterparts outside of the U.S. have set aside bandwidth for unlicensed use in the so-called ISM (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is being made available (Industrial, Scientific and Medical) band. Spectrum in the vicinity of 2.4 GHz, in particular, is being made available of users around the globe.

12. Local Area Network (LAN)

A LAN is a group of computers, each equipped with the appropriate network adapter card connected by cable/air, that share applications, data, and peripherals. All connections are made via cable or wireless media, but a LAN does not use telephone services. It typically spans a single building or campus.

13. Network

A network is a system of computers that is connected. Data, files, and messages can be transmitted over this network. Networks may be local or wide area networks.

14. Protocol

A protocol is a standardized set of rules that specify how a conversation is to take place, including the format, timing, sequencing and/ or error checking.

15. SSID

A Network ID unique to a network. Only clients and Access Points that share the same SSID are able to communicate with each other. This string is case-sensitive.

16. Static IP Addressing

A method of assigning IP addresses to clients on the network. In networks with Static IP address, the network administrator manually assigns an IP address to each computer. Once a Static IP address is assigned, a computer uses the same IP address every time it reboots and logs on to the network, unless it is manually changed.

17. Temporal Key Integrity Protocol (TKIP)

The Temporal Key Integrity Protocol, pronounced tee-kip, is part of the IEEE 802.11i encryption standard for wireless LANs. TKIP is the next generation of WEP, the Wired Equivalency Protocol, which is used to secure 802.11 wireless LANs. TKIP provides per-packet key mixing, a message integrity check and a re-keying mechanism, thus fixing the flaws of WEP.

18. Transmission Control Protocol / Internet Protocol (TCP/IP)

TCP/IP is the protocol suite developed by the Advanced Research Projects Agency (ARPA). It is widely used in corporate Internet works, because of its superior design for WANs. TCP governs how packet is sequenced for transmission the network. The term “TCP/IP” is often used generically to

refer to the entire suite of related protocols.

19. Transmit / Receive

The wireless throughput in Bytes per second averaged over two seconds.

20. Wi-Fi Alliance

The Wi-Fi Alliance is a nonprofit international association formed in 1999 to certify interoperability of wireless Local Area Network products based on IEEE 802.11 specification. The goal of the Wi-Fi Alliance's members is to enhance the user experience through product interoperability. The organization is formerly known as WECA.

21. Wi-Fi Protected Access (WPA)

The Wi-Fi Alliance put together WPA as a data encryption method for 802.11 wireless LANs. WPA is an industry-supported, pre-standard version of 802.11i utilizing the Temporal Key Integrity Protocol (TKIP), which fixes the problems of WEP, including using dynamic keys.

22. Wide Area Network (WAN)

A WAN consists of multiple LANs that are tied together via telephone services and / or fiber optic cabling. WANs may span a city, a state, a country, or even the world

23. Wired Equivalent Privacy (WEP)

Now widely recognized as flawed, WEP was a data encryption method used to protect the transmission between 802.11 wireless clients and APs. However, it used the same key among all communicating devices. WEP's problems are well-known, including an insufficient key length and no automated method for distributing the keys. WEP can be easily cracked in a couple of hours with off-the-shelf tools.

24. Wireless LAN (WLAN)

A wireless LAN does not use cable to transmit signals, but rather uses radio or infrared to transmit packets through the air. Radio Frequency (RF) and infrared are the commonly used types of wireless transmission. Most wireless LANs use spread spectrum technology. It offers limited bandwidth, usually under 11Mbps, and users share the bandwidth with other devices in the spectrum; however, users can operate a spread spectrum device without licensing from the Federal Communications Commission (FCC).

25. Fragment Threshold

The proposed protocol uses the frame fragmentation mechanism defined in IEEE 802.11 to achieve parallel transmissions. A large data frame is fragmented into several fragments each of size equal to fragment threshold. By tuning the fragment threshold value, we can get varying fragment sizes. The determination of an efficient fragment threshold is an important issue in this scheme. If the fragment threshold is small, the overlap part of the master and parallel transmissions is large.

This means the spatial reuse ratio of parallel transmissions is high. In contrast, with a large fragment threshold, the overlap is small and the spatial reuse ratio is low. However high fragment threshold leads to low fragment overhead. Hence there is a trade-off between spatial re-use and fragment overhead. Fragment threshold is the maximum packet size used for fragmentation. Packets larger than the size programmed in this field will be fragmented If you find that your corrupted packets or

asymmetric packet reception (all send packets, for example). You may want to try lowering your fragmentation threshold. This will cause packets to be broken into smaller fragments. These small fragments, if corrupted, can be resent faster than a larger fragment. Fragmentation increases overhead, so you'll want to keep this value as close to the maximum value as possible.

26. RTS(Request To Send) Threshold

The RTS threshold is the packet size at which packet transmission is governed by the RTS/CTS transaction. The IEEE802.11-1997 standard allows for short packets to be transmitted without RTS/CTS transactions. Each station can have a different RTS threshold. RTS/CTS is used when the data packet size exceeds the defined RTS threshold. With the CSMA/CA transmission mechanism, the transmitting station sends out an RTS packet to the receiving station, and waits for the receiving station to send back a CTS (Clear to Send) packet before sending the actual packet data. This setting is useful for networks with many clients. With many clients, and a high network load, there will be many more collisions. By lowering the RTS threshold, there may be fewer collisions, and performance should improve. Basically, with a faster RTS threshold, the system can recover from problems faster. RTS packets consume valuable bandwidth, however, so setting this value too low will limit performance.

27. Beacon Interval

In addition to data frames that carry information from higher layers, 802.11 includes management and control frames that support data transfer. The beacon frame, which is a type of management frame, provides the "heartbeat" of a wireless LAN, enabling stations to establish and maintain communications in an orderly fashion. Beacon Interval represents the amount of time between beacon transmissions. Before a station enters power save mode, the station needs the beacon interval to know when to wake up to receive the beacon (and learn whether there are buffered frames at the access point).

28. Preamble Type

There are two preamble types defined in IEEE 802.11 specification. A long preamble basically gives the decoder more time to process the preamble. All 802.11 devices support a long preamble. The short preamble is designed to improve efficiency (for example, for VoIP systems). The difference between the two is in the Synchronization field. The long preamble is 128 bits, and the short is 56 bits.

29. WPA2

It is the second generation of WPA. WPA2 is based on the final IEEE 802.11i amendment to the 802.11 standard.

30. Temporal Key Integrity Protocol (TKIP)

The Temporal Key Integrity Protocol, pronounced tee-kip, is part of the IEEE 802.11i encryption standard for wireless LANs. TKIP is the next generation of WEP, the Wired Equivalency Protocol, which is used to secure 802.11 wireless LANs. TKIP provides per-packet key mixing, a message integrity check and a re-keying mechanism, thus fixing the flaws of WEP.

31. 802.1x Authentication

802.1x is a framework for authenticated MAC-level access control, defines Extensible Authentication Protocol (EAP) over LANs (WAPOL). The standard encapsulates and leverages much of EAP, which was defined for dial-up authentication with Point-to-Point Protocol in RFC 2284. Beyond encapsulating EAP packets, the 802.1x standard also defines EAPOL messages that convey the shared key information critical for wireless security.

32. Advanced Encryption Standard (AES)

Security issues are a major concern for wireless LANs, AES is the U.S. government's next-generation cryptography algorithm, which will replace DES and 3DES.

Appendix: FAQ

1. What is WMM?

Wi-Fi Multimedia (WMM), a group of features for wireless networks that improve the user experience for audio, video and voice applications. WMM is based on a subset of the IEEE 802.11e WLAN QoS draft standard. WMM adds prioritized capabilities to Wi-Fi networks and optimizes their performance when multiple concurring applications, each with different latency and throughput requirements, compete for network resources. By using WMM, end-user satisfaction is maintained in a wider variety of environments and traffic conditions. WMM makes it possible for home network users and enterprise network managers to decide which data streams are most important and assign them a higher traffic priority.

2. What is WMM Power Save?

WMM Power Save is a set of features for Wi-Fi networks that increase the efficiency and flexibility of data transmission in order to conserve power. WMM Power Save has been optimized for mobile devices running latency-sensitive applications such as voice, audio, or video, but can benefit any Wi-Fi device. WMM Power Save uses mechanisms included in the IEEE 802.11e standard and is an enhancement of IEEE 802.11 legacy power saves. With WMM Power Save, the same amount of data can be transmitted in a shorter time while allowing the Wi-Fi device to remain longer in a low-power “dozing” state.

3. What is GI?

GI stands for Guard Interval. It’s a measure to protect wireless devices from cross- interference. If there are two wireless devices using the same or near channel, and they are close enough, radio interference will occur and reduce the radio resource usability.

4. What is STBC?

STBC stands for Space-Time Block Coding, which is a technique used to transfer multiple copies of data by multiple antenna, to improve data transfer performance. By using multiple antennas, not only data transfer rate is improved, but also the wireless stability.

EC Declaration of Conformity

For the following equipment:

*Type of Product : 802.11n Micro Wireless USB Adapter
*Model Number : WNL-U554M

* Produced by:
Manufacturer's Name : **Planet Technology Corp.**
Manufacturer's Address: 10F., No.96, Minquan Rd., Xindian Dist.,
New Taipei City 231, Taiwan (R.O.C.)

is herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Laws of the Member States relating to 99/5/EC R&TTE.
For the evaluation regarding the R&TTE the following standards were applied:

EN 300 328 V1.7.1	(2006)
EN 301 489-1 V1.8.1	(2008)
EN 301 489-17 V2.1.1	(2009)
EN 62311	(2008)
EN 60950-1	(2006 + A11:2009 + A1:2010)

Responsible for marking this declaration if the:

☒ **Manufacturer** ☐ **Authorized representative established within the EU**

Authorized representative established within the EU (if applicable):

Company Name: **Planet Technology Corp.**

Company Address: **10F., No.96, Minquan Rd., Xindian Dist., New Taipei City 231, Taiwan (R.O.C.)**

Person responsible for making this declaration

Name, Surname **Kent Kang**

Position / Title : **Product Manager**

Taiwan	**1th March., 2013**	Kent Kang
Place	*Date*	*Legal Signature*

EC Declaration of Conformity

English	Hereby, **PLANET Technology Corporation,** declares that this **802.11n Wireless USB Adapter** is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.	**Lietuviškai**	Šiuo **PLANET Technology Corporation,**, skelbia, kad **802.11n Wireless USB Adapter** tenkina visus svarbiausius 1999/5/EC direktyvos reikalavimus ir kitas svarbias nuostatas.
Česky	Společnost **PLANET Technology Corporation,** tímto prohlašuje, že tato **802.11n Wireless USB Adapter** splňuje základní požadavky a další příslušná ustanovení směrnice 1999/5/EC.	**Magyar**	A gyártó **PLANET Technology Corporation**, kijelenti, hogy ez a **802.11n Wireless USB Adapter** megfelel az 1999/5/EK irányelv alapkövetelményeinek és a kapcsolódó rendelkezéseknek.
Dansk	**PLANET Technology Corporation,** erklærer herved, at følgende udstyr **802.11n Wireless USB Adapter** overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF	**Malti**	Hawnhekk, **PLANET Technology Corporation,** jiddikjara li dan **802.11n Wireless USB Adapter** jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC
Deutsch	Hiermit erklärt **PLANET Technology Corporation,** dass sich dieses Gerät **802.11n Wireless USB Adapter** in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet". (BMWi)	**Nederlands**	Hierbij verklaart , **PLANET Technology orporation,** dat **802.11n Wireless USB Adapter** in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG
Eesti keeles	Käesolevaga kinnitab **PLANET Technology Corporation,** et see **802.11n Wireless USB Adapter** vastab Euroopa Nõukogu direktiivi 1999/5/EC põhinõuetele ja muudele olulistele tingimustele.	**Polski**	Niniejszym firma **PLANET Technology Corporation,** oświadcza, że **802.11n Wireless High Power USB Adapter** spełnia wszystkie istotne wymogi i klauzule zawarte w dokumencie „Directive 1999/5/EC”.
Ελληνικά	*ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ* , **PLANET Technology Corporation,** *ΔΗΛΩΝΕΙ ΟΤΙ ΑΥΤΟ* **802.11n Wireless USB Adapter***ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ*	**Português**	**PLANET Technology Corporation**, declara que este **802.11n Wireless USB Adapter** está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.
Español	Por medio de la presente, **PLANET Technology Corporation,** declara que **802.11n Wireless USB Adapter** cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE	**Slovensky**	Výrobca **PLANET Technology Corporation,** týmto deklaruje, že táto **802.11n Wireless USB Adapter** je v súlade so základnými požiadavkami a ďalšími relevantnými predpismi smernice 1999/5/EC.
Français	Par la présente, **PLANET Technology Corporation,** déclare que les appareils du **802.11n Wireless USB Adapter** sont conformes aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE	**Slovensko**	**PLANET Technology Corporation**, **s tem potrjuje,** da je ta **802.11n Wireless USB Adapter** skladen/a z osnovnimi zahtevami in ustreznimi določili Direktive 1999/5/EC.
Italiano	Con la presente , **PLANET Technology Corporation,** dichiara che questo **802.11n Wireless USB Adapter** è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.	**Suomi**	**PLANET Technology Corporation,** vakuuttaa täten että **802.11n Wireless USB Adapter** tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Latviski	Ar šo **PLANET Technology Corporation,** apliecina, ka šī **802.11n Wireless USB Adapter** atbilst Direktīvas 1999/5/EK pamatprasībām un citiem atbilstošiem noteikumiem.	**Svenska**	Härmed intygar, **PLANET Technology Corporation,** att denna **802.11n Wireless USB Adapter** står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.